國立臺灣大學生醫電子與資訊學研究所

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國立臺灣大學生醫電子與資訊學研究所

BEBI Annual Report, No. 6 / Sep. 2012

國立臺灣大學
生醫電子與資訊學研究所

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序言 Preface

本人於8月1日起，接任生醫電資所第三任所長，有幸成為第一位生醫背景的老師在臺大電機資訊學院擔任所長，這應該是全國的創舉。首先感謝所內的老師們對於我的支持及鼓勵，讓我有這個機會在未來三年能替大家服務。本所是電機資訊學院最年輕的研究所，過去六年在兩位前所長李百祺教授及賴飛羆教授的努力下，已為本所打下扎實的基礎，如同蓋房子一般，要有好的地基才能蓋出堅固的房子。

本所的設立是電機資訊學院的一個創新，強調結合生醫、電機及資訊的跨領域研究，也因此我們的教師主要是由電機學群及資訊學群的老師們組成。本所的規模也從只有八位專任教師及招收二位博士班學生，經過六年的發展，發展成多達38位的教師群，學生也由最初的二位，快速增加到76位博士生及74位碩士生。

由於過去幾年迅速擴張，所以不論在教學、研究及所務行政都需要有新的思維及作法，因此我們將在對本所兩組間的課程作更進一步的整合，並持續推動跨領域學習，以合聘或增聘兼任師資來開設生醫相關課程外，也欲加強生醫電子組及生醫資訊組教師間的跨組合作，推動並建立生醫核心實驗室，以加強本所教師們在生醫實驗的自主性。在所務行政方面，欲提升本所與相關產業的溝通、並加強與國內外大學及研究機構之學術交流，以掌握人力需求現況及未來發展趨勢。在學生方面則是欲增加本所畢業生的就業及出國輔導、並推動學生積極參與所內各項事務，藉由強化所學會的功能，擴大學生們參與本所活動的意願。

為了打造一個具有本所特色的跨領域研究及學習的環境，並促使本所成為本校及全國培養跨領域人才的重鎮，所以在未來的三年中，如何落實上述所務工作的推展，並提升作業效率是在未來三年的重點經營。最後，期許生醫電資所在全體師生及行政人員共同的努力下，能夠成為臺大推動跨領域學習的搖籃，進而達成整合生醫/工程/資訊跨領域研究的典範。

莊曜宇

2012年9月

It is my great honor to serve as the 3rd Director of Graduate Institute of Biomedical Electronics and Bioinformatics (BEBI). In particular, it's the very first time for a biomedical background scholar to hold the directorship of a graduate institute in the College of Electrical Engineering and Computer Science (EECS) of National Taiwan University (NTU).

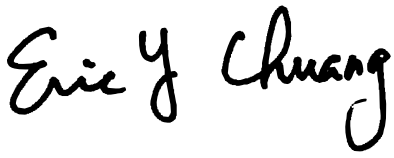
First of all, I would like to thank the encouragement and support from all the faculty members of BEBI for giving me this opportunity to make some contributions in the next three years. BEBI is the youngest graduate institute in the College of Electrical Engineering and Computer Science which was established in 2006. The uniqueness and innovation of BEBI is that it combines biomedical science, electrical engineering and computer science to become an integrated institute from multiple disciplines for fostering interdisciplinary learning and research. Therefore, the primary faculty members of BEBI are from two dividsions in the College of EECS, including Electrical Engineering and Computer Science.

Because of great efforts and achievements made by two former Directors of BEBI, Prof. Pai-Chi Li and Prof. Fei-Pei Lai, both the faculty and graduate student numbers have been increased tremendously over the past six years. BEBI's faculties have been increased from 8 to 38, including primary, joint, and adjunct professors. Furthermore, we only admitted two PhD students in 2006 and currently we are having 76 doctoral students and 74 master students.

Owing to the rapid expansion in the past few years, it's time to revisit our curriculum, research as well as administrative supports at BEBI. We promise to make a better integration of curriculum for students; a better research environment for promoting interdisciplinary collaborations between the faculty members; a more efficient and smooth administrative supports for students and faculties. We will continue to promote interdisciplinary learning and try to establish a Biomedical Core Laboratory to provide adequate resources for the faculties conducting biomedical experiments.

Moreover, we would like to establish a better communication mechanism with the related industries in biomedical electronics and bioinformatics, and strengthen the academic exchanges and collaborations with domestic and international academic institutions. By doing so, it will enable us a better understanding of the future trends and manpower needs in the related industries. Thus, our students can be more competitive for future job opportunities. On the other hand, we are committed to increase our supports to the BEBI's students. We will strengthen the function of the BEBI Students Association to motivate student's engagements in various operations of BEBI. The BEBI office and staff members will provide better supports for career counseling or studying abroad.

In summary, we strive to create a top notched learning and research environment for promoting interdisciplinary research. We are hoping to take a leading role in educating and training interdisciplinary researchers/engineers at NTU.



September,2012

目錄 Contents

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、微陣列分析、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18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41名碩士新生加入。本所有38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 multi disciplinary 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, microarrays, 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 18 new Ph.D. students every year. Our master program started in August, 2007 with 41 new students entering the institute annually. There are 38 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 新進教師介紹 New Faculty

一、邱銘章 副教授 Ming-Jang Chiu, Associate professor

邱銘章副教授於1984年畢業於臺灣大學醫學系，畢業後進入臺大醫院神經部擔任住院醫師，1991-1992年到了德國Justus-Liebig Universitaete生理研究所擔任研究員，回國後繼續進修並於2000年獲得臺灣大學電機工程研究所醫學工程組的博士學位， 2001至2004年於臺北護理學院擔任聽語障礙及科學研究所的兼任助理教授，並在2007年臺大醫學院擔任副教授。現為臺灣失智症協會理事長，也是國際阿茲海默症協會2013年將在臺北舉辦的第28屆國際阿茲海默症大會的主辦國主席。

主要的研究領域為認知神經科學、失智症、記憶障礙、睡眠醫學、臨床神經生理學等方面，尤其在阿茲海默症方面有卓越的成果，像是阿茲海默症發病相關之基因生物標記、研究並發展血漿中阿茲海默症病理相關蛋白包括Aβ40、Aβ42、τ蛋白等分子生物標記，並發表血漿生物標記相關之磁振造影容積研究、擴散張量、類澱粉蛋白之正子射出斷層攝影、基因研究之論文。

Ming-Jang Chiu, associate professor, was graduated from Department of Medicine, National Taiwan University in 1984. After graduated from medical school, he received resident training in the Department of Neurology National Taiwan University Hospital. He visited Institute of Physiology, Justus-Liebig University, Germany and learned digital EEG and EP mapping there. After returning to Taiwan, he studied in Graduate Institute of Electrical Engineering, National Taiwan University and was graduated from a Ph.D. program for Medical Engineering. He was a adjunct assistant professor in Graduate Institute of Speech and Hearing Disorders and Sciences, National Taipei Nursing College from 2001-2004. He became an associate professor of the Department of Neurology, College of Medicine, National Taiwan University in 2007. He is currently president of the Taiwan Alzheimer's Disease Association and is the conference chair of the 28th International Conference of Alzheimer's Disease International 2013 in Taipei.

His major research fields of interest were cognitive neuroscience, dementia, memory impairment, sleep medicine and clinical neurophysiology. In recent years, he was devoted into the research of biomarkers for Alzheimer's disease. He and his colleagues developed the plasma biomarkers such as Aβ40、Aβ42、τ proteins and have done association studies utilizing MRI volumetry, DTI, PIB-PET and genetics.

National Taiwan University

貳 新進教師介紹
New Faculty

二、周迺寬 助理教授 Nai-Kuan Chou, Clinical assistant professor

周迺寬助理教授之專長為生醫光電、醫學工程光電領域、機械循環輔助、生醫工程材料、生理訊號無線傳輸、微感應器及遠距照護等研究。由於醫院臨床工作參與葉克膜維生系統急救小組，在臨床經驗累積了人工器官的傲人成績。在住院醫師時期加入朱樹勳教授臺大一號心室輔助器研製團隊，小公牛長期心室輔助器動物實驗最久148天，也證明國人所研發的高分子聚胺酯生醫材料在長期使用下，其安全性、穩定性，以及血液相容性，臺大一號心室輔助器在民國89年4月取得中華民國專利証書。96年12月通過「幼兒型心室輔助器」專利申請。陸續在國科會經費的支持下，繼續臺大一號心室輔助器長期動物實驗及生物控制器的研發，及心室輔助器在心衰竭動物模型利用微流體通道上離子運動特性的研究及其相關之應用，為了讓重症的心衰竭患者有更好的生活品質與一年後存活率，利用心室輔助器對於心臟衰竭病患等待心臟移植前，患者在心室輔助器支持下期間會發生生理訊號的變化以及神經元的離子運動對神經信號的傳輸的表現探討分析，就顯得十分重要。若能以工程角度探討其物理機制，則對於神經相關疾病的診斷甚至進一步療程的發展都有相當大的助益。

隨著微奈米機電技術的興起，生物檢測尺寸可達於微米和奈米之間，其介於生物細胞和分子之間，因此微奈米製程技術可成為研究生命科學領域的新工具，生醫光電技術的推進，95年參與電機系汪重光教授病理遙測系統與生醫感測晶片研究團隊，在生醫醫學工程有了更深入研究，也方面的接觸。周醫師本身也是心血管疾病、心衰竭照護及心臟移植團隊的醫師，對於無線感測器網路技術前瞻研發也更是必要，無線感測器透過晶片訊號及網路傳輸技術將病患的生理訊號即時傳輸至監控系統，醫護人員可即時掌握患者的病況，或是在居家利用量測儀器將量測值透過電腦e化網路傳輸至醫療院的監控系統，感測器網路研發產業發展與E化遠距監測病人生理狀況，尤其對於心衰竭或心血管等慢性重症病人可作為遠距醫護醫療，時時刻刻掌控並了解病患狀況，提供患者更好醫療安全品質。

Nai-Kuan Chou was born in Taipei, Taiwan, R.O.C. in 1963. He received the M.D. degree from the National Taiwan University, College of Medicine, Taipei, Taiwan, R.O.C. in 1989, and the Ph.D. degree in electrical engineering from the National Taiwan University, Taipei, Taiwan, R.O.C.. in 2001,

Dr. Chou currently is the director of Intensive Care Unit of the Department of Surgery at the National Taiwan University Hospital. Dr. Chou also is the chief secretary of the Transplantation Society of Taiwan and is the clinical assistant professor of the Department of Surgery at National Taiwan University, College of Medicine since 2003.

Dr. Chou completed the general surgical resident training from 1990 to 1992, the cardiothoracic vascular resident training from 1992 to 1994, and the chief surgical resident training from 1994 to 1995 at the National Taiwan University Hospital. During the surgical training, he has been researched the development of totally implantable impeller ventricular assist device in animals.

Dr. Chou was the Surgical Research Fellow for Thoratec Ventricular Assist Device and Heart Transplantation at the California Pacific Medical Center from 1996 to 1997. His research interests include digital signal processing of electrocardiogram (EKG), physiological signal analysis of the cardiac cycle in the portable impeller centrifugal ventricular assist device.

參 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括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。

Faculty members in this group have diverse research interests including “medical imaging”, “medical instrumentation and biomedical signal processing”, “biochips and biomedical sensors”, and “biomedical optics”. 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.

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」、「計算藥物學及計算化學」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)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，研究重點則是針對生物醫學及生命科學問題，建構數學分析及模擬計算的系統模型，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，舉凡醫學資訊應用所涉及的網路系統、多媒體系統、資料庫系統以及平行計算、分散式計算、即時計算之軟硬體設計與演算法分析均包含在內。

We dedicate our resources on the cutting-edge topics such as "biomedical data analysis and mining", "computational system biology", "computational pharmacology and chemistry". In the area of biomedical data analysis and mining, our major research includes: biochip (Micro-array) 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 system biology, we focused on advanced mathematical system models or simulations we developed to describe behaviors found in biomedicine and life science. In the area of computational pharmacology and chemistry, we are designing new computational models and efficient algorithms in quantum chemistry and molecular dynamics simulation for drugs and vaccine development. In medical informatics, we cover such as a wide range of topics in building the infrastructure for medical informatics, networking, multimedia, database, parallel processing, distributed computing, real-time computing, and algorithms as well as decision making and policy in current national health insurance database.

肆 學術活動 Academic Activities

一、第二屆全國生醫電子與資訊專題實務競賽 The 2nd National Biomedical Electronics and Bioinformatics Special Topics Competition

本競賽目的為鼓勵生醫電子與資訊相關科系之大專院校學生，利用所學之生醫、電子、資訊與網路等技術進行跨領域的合作與整合，研發生醫量測、遠距醫療、居家照護、健康管理、醫療輔助相關之系統的設計與應用，增進學生的學習興趣並培養其實務能力，同時也希望學生在產品設計時就能一併考慮產品之實用性與便利性，以提升我國在生醫電子與資訊相關產品之設計能力及實際競爭力。

本次活動共計73隊報名參賽，其中56組隊伍通過資格審查；在經過公平審慎的初賽評比後，最後終於挑選出28組優秀隊伍進入決賽。決賽於9月10日假臺灣科技大學國際大樓IB-101會議室盛大舉辦，當天出席人數有指導老師30人、學生96人，共計126人。主辦單位特於會議室外安排了展演空間，評審團可依序觀看各組參賽作品，並由組隊學生進行口頭報告及作品實際操作展示，讓評選過程不僅公平公正公開，氣氛也因此活潑熱絡許多。

此次評審依據創意性、實用與便利性、系統驗證程度（準確性、穩定性、功耗）、現場成品展示及報告內容流暢與否進行評比，選出前三名及Epson特別獎、Cablesoft特別獎、Huayu特別獎和TEDPC特別獎各一隊，以及佳作三名。前三名得獎作品名稱分別為「行動多功能生理和醫療資訊系統」、「泛用型可攜式健康銀行系統設計與研製」，以及「Android手機結合全球定位系統及HMM即時心電圖監控之遠端健康照護與緊急通報系統」，皆獲得評審們一致的肯定與讚賞，使我們引頸期盼這些作品有正式上市發揮實際功用的時刻到來，也期許這些擁有專業、熱忱及豐富實力的同學們，未來能夠在生醫電資領域上更加發光發熱，為社會做出更大的貢獻！

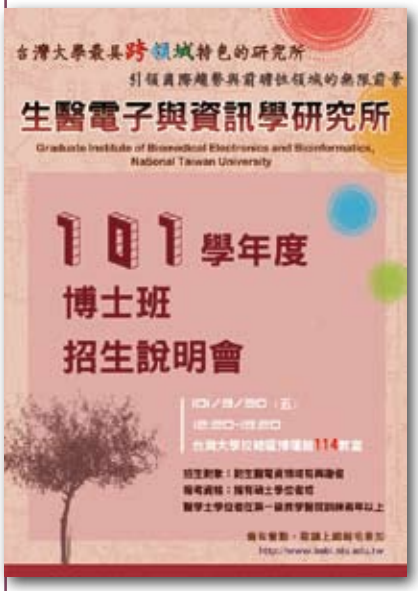
The purpose of this contest is to encourage students who study in fields related to Biomedical electronics and bioinformatic's to utilize and integrate what they have learned in biomedical, electronics, information engineering and network engineering int the design and building of bio-medical measurement, telemedicine, home care, health management and auxiliary medical service systems. Aside from evoking students' interest and developing their practical abilities, the competition also serves to strengthen our countries competitive ability in term sof design and actual capacity by asking students to consider the practicability and convenience of their design competitive ability in design and actual capacity.

A total of 73 teams applied for the contest, and 56 teams passed the initial qualification for the contest. After a fair and prudent preliminary contest, 28 teams were selected for the finals, which was held at IB-101 in NTUST, on September 10 2011. Attended by 126 participants of which, of which, 30 were advisers and 96 were students, sponsors had arranged for an exhibition space outside the conference room for the jury to review all entries and each team had to deliver an oral report and conduct an equipment demonstration. The selection process was fair, equitable and open, which was conducted in a cordial atmosphere.

The criteria that participants were judged on were: creativity practical and convenience, the degree of system validation(accuracy, stability, power consumption), and the fluency that entries displayed during their presentation. Based on this selection criteria; the top three teams as well as recipients for four special awards, provided by Epson, Cablesoft, Hauyu and TEDPC, as well as three Hornorable Mention's were selected. The top three winning entries won unanimous recognition and appreciation from the huries and included: 1. A Mobile multi-functional physiological and medical information system; 2. A Design and development of universal portable Health banking system;3. A GPS and HMM Real time ECG monitoring for remote healthcare and emergency notification system applied to Android smartphone. We look forward eagerly to the day that these entries become officially listed and play a practical function in everyday life. Students passionate in Biomedical electronics related fields will hopefully continue to purse their work with enthusiasm and make greater contributions to society in the future.

肆 學術活動 Academic Activities

二、博士班招生說明會
BEBI Introduction to prospective students: College of medicine (2012/03/30)



三、碩士班新生說明會 BEBI Introduction to new students: (2012/3/23)

四、演講　Lectures

1. 100.09.19
   黃筱鈞　博士，中央研究院生物醫學科學研究所
   Topic: A systems approach to a better cancer medicine

2. 100.09.26
   張恕　副主任，國家衛生研究院 醫學工程研究組
   Topic: 工程師在生醫產品研發的角色-以MRI-HIFU為例

3. 100.10.03
   唐傳義　校長，靜宜大學
   Topic: From Laboratory to Industry – The New Challenge of Bioinformatics Research

4. 100.10.17
張瑞雄 副校長，東華大學
Topic: SoLoMoCloCroBloGloIo

5. 100.10.24
張嘉淵 技術長，廣達電腦
Topic: Innovating Quanta

6. 100.10.31
陳和麟 教授，臺大電機系
Topic: Programming Collaborative Behaviors

7. 100.11.07
林岳勳 博士，Intel中心
Topic: Establishing Group Trust Using Mobile Devices

8. 100.11.14

廖之韻 小姐，作家

Topic: 觀看日常的不日常方式—書寫城市、書寫飲食、書寫身體

9. 100.11.21

陳啓東 博士，中央研究院物理所

Topic: Nanofabricated Devices: From Superconducting Single-Electron-Transistors to Semiconducting Nanowire Field-Effect-Transistors

10. 100.11.28

陳培菱 副主任，中央研究院應用科學研究中心

Topic: Exploring the Formation of Focal Adhesions on Nano-Patterned Surfaces using Super-resolution Imaging

11. 100.12.05

雷少民 處長，聯發科技(股)公司

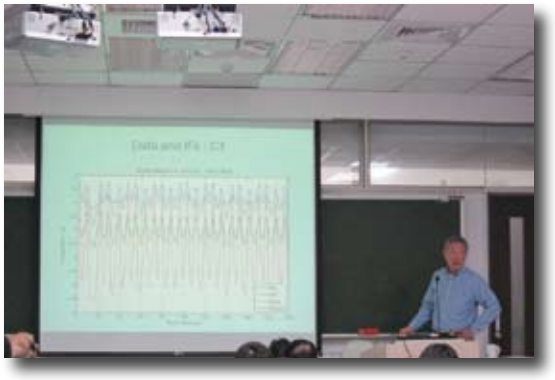
Topic: Video Compression Basics

12. 100.12.12
詹迺立 教授，臺大醫學院生化暨分生所
Topic: Structural Studies of Human Topoisomerase IIβ and Its Interactions with DNA and Anticancer Drugs

13. 100.12.19
李葭儀 教授，國立臺北藝術大學音樂系
Topic: 美麗人聲

14. 100.12.26
邱銘章 醫師，臺大醫院神經科
Topic: 極早期阿茲海默症診斷的新發展

15. 101.01.02
謝思謙 總經理，威綸科技(股)公司
Topic: 夢想與堅持



16. 101.02.20
黃鍔 院士，中央大學數據分析方法研究中心
Topic: An Adaptive Method for Nonlinear and Nonstationary Data Analysis

17. 101.03.05
陳定信 院士，臺灣大學醫學院內科
Topic: 台灣肝炎防治的回顧與展望：兼論其他學門的貢獻—以實驗動物研究為例

18. 101.03.12
廖瑩怡 董事長，瑩米蘭國際股份有限公司
Topic: 時尚的外表，醫療的心

19. 101.03.19
駱尚廉 教授、葉欣誠 教授、李育明 教授
Topic: 跨科際論壇：生醫電資與環保

20. 101.03.26
王瑜 教授，臺灣首府大學
Topic: 如何成為真正之生醫專業人士—我的生醫研究經驗分享

21. 101.04.02
歐耿良 院長，臺北醫學大學口腔醫學院
Topic: 醫學與科學的結合—轉譯醫學

22. 101.04.09
王育雯 所長、蔡振家 教授
Topic: 跨科際論壇：生醫電資與音樂

23. 101.04.16
周呈霙 教授，臺大生物產業機電工程學系
Topic: Exploitation of Phase Contrast in Modern Tomographic Imaging

24. 101.04.23

程德勝 教授，暨南大學電機工程學系

Topic: Noninvasive Medical Diagnostics and Therapeutics

25. 101.04.30

曾文毅 教授、楊延光 教授、邱銘章 教授

Topic: 跨科際論壇：生醫電資與心理-精神健康

26. 101.05.07

張寅 所長，陽明大學生醫工程研究所

Topic: 麻醉學的脊椎硬脊膜腔定位技術研發

27. 101.05.14

李仁燿 老師，第49屆十大傑出青年(耕陶源)

Topic: 堅持

28. 101.05.21
賴美淑 教授，臺灣大學公共衛生系
Topic: Health IT and Patient Care: Building Safer Systems for Better Care

29. 101.05.28
林淵翔 教授，臺灣科技大學電子工程系
Topic: 生醫電資實務競賽之經驗分享

30. 101.06.04
陳彥仰 教授，臺灣大學資訊工程系
Topic: 行動醫療 App 使用者體驗設計

31. 101.06.11
陳瓊花 教授、陳秋瑾 主任、曹筱玥 教授
Topic: 跨科際論壇：生醫電資與美術

五、國立臺灣大學電機資訊學院100年度畢業典禮
2012 Commencement of College of Electrical Engineering and Computer Science, NTU

六、2012/07/10~07/12生醫電子資訊營
Biomedical Electronics and Bioinformatics Camp on July 10-12, 2012

2012臺大生醫電資營於7/10(二)~7/12(四)在臺大博理館舉辦，已是生醫所第六次舉行暑期營隊活動。本活動主要目的為透過系列課程介紹，使學員對於雲端運用有一深入的認識，並培養其興趣，作為進入相關領域之準備，並為國家培養生物科技與醫療電子資訊的學術與產業人才。

近年來雲端運用已經成為資訊產業最重要的課題之一，在經濟不景氣的衝擊之下，能夠持續提供高品質的資訊服務已經是刻不容緩的議題，因此特擬定今年活動主題為生醫電資領域的雲端運用，廣邀學界及業界在雲端領域的專家們前來授課，並安排實驗室參觀的活動，使學員了解生醫電資所教師們所研究的領域及背景，啓發學員對生醫電資的興趣。

另外在三天課程的尾聲舉辦創意競賽，將不同背景的學員混合編組，學員們利用小組討論時間，將課堂上所學習到的知識充分應用到報告中，並透過組員間相互溝通交流，培養團隊合作的能力，將團隊成果呈現於評審面前。而後，評審委員透過創新度、可執行性、流程規劃完整性及貢獻價值評估等因素考量，選出本次競賽前三名之優勝隊伍頒發獎狀及獎金。

本次活動總共有50位學員報名參加，成員有大學生、研究生及社會人士，顯示生醫電資營課程安排豐富多元，吸引不同背景的學員報名參加，另外在學員問卷調查中，有100%的學員滿意這次的營隊規劃，同時有98%的學員表達願意再次參加的意願，希望本次活動能帶給學員對於雲端產業有更深入的認識。

The 2012 NTU Biomedical Electrical Engineering from 7/10 (Tuesday)-7/12 (Thursday) at National Taiwan University BL is the sixth annually held biomedical summer camp. The main purpose of this activity is to provide a deep understanding of cloud technology to students through a series of courses as well as the development of their interest, preparation into the entry of this field, and raise the country's academic and practical ability in biotechnology and medical electronics and information.

Use of Cloud in recent years has become one of the most important subjects of the information industry due to its ability to continuosly provide high quality information service despite the economic downturn. As a result this years event focused on the application of cloud technology in the medical field of electrical engineering, having invited experts in the field, both academically and professionally, as teachers. Also, arragements were made for participants to tour and observe lab activities so that students would gain a better understanding of the areas of research in Biomedical Elecetrical Enginerring that and hopefully spark students intrest in the subject.

In addition, at the end of the three day course, a creative contest was organized with students from different backgrounds being randomly grouped together. Students used the time during Group discussion to fully apply the knowledge learned in the classroom and integrate it into the report that was eventually presented to the judges. The results not only demonstrated the knowledge learnt, but their ability to communicate with each other and teamwork as well. Afterward students were judged on the degree of innovatoin, enforceability, the planning process, and the actual contribution value of the result. Based on this criteria, the top three winning teams were selected and presented with awards and prize money. A total of 50 students enrolled in this event; with members being undergraduates, graduates and even people already in the community, demonstrating Biomedical Electrical Engineering Camp curriculum diversity, and its ability to attract students of different backgrounds to enroll. Also, the student asked survey demonstrated an 100% students satisfaction with the planning of the camp, and that 98% of the students were willing to re-enroll. Hopefully this event gave students a more in-depth understanding of the cloud industry.

伍 國際交流
International Exchanges

一、2011 台紐奈米生醫科技交流研討會
2011 Taiwan-New Zealand Workshop on Nanotechnologies for Bio-Imaging, Sensing, and Diagnosis

生物科技已被視為21世紀的顯學，在過去10年內更投注大量資源，其中奈米技術在生醫科技的應用更是備受關注並成為熱門研究領域。因為紐西蘭憑藉農業與生醫領域的優勢，因此近年來台灣與紐西蘭正積極推動雙邊學術交流與合作研究。

本次研討會的目的旨在分享兩國的發展經驗，並預期達成以下目標: 沿續 2008 年首次舉辦的台紐奈米生醫科技交流研討會結論，強化雙方互相瞭解之基礎、擴大生醫科技與奈米技術領域的觀點、獲取與奈米生醫科技產業的合作機會、選定研究主題並建立合作策略、提升台紐雙方學者的國際知名度及學術成就。

因此在我方負責人李百祺教授與紐方負責人Dr. Maan Alkaisi 密切書信往來後，敲定於2011年11月3-4日舉行為期兩天的研討會。本次研討會共計邀請14位講者。我方8位，如台灣大學李百祺教授、何佳安教授；紐方6位，如Dr. Maan Alkaisi,Dr. Ricahrd Tilley。除邀請台紐雙方在生醫奈米方面的頂尖研究者參加外，亦開放各界人士及學生參與，報名人數約45人，參加情況相當踴躍，台紐雙方講者也都各自發表令人印象深刻的演說。

本研討會除了探討奈米粒子於生命科學及醫學方面之應用生物成像技術、生物感測裝置與生醫微機電技術、奈米材料及奈米科技應用於疾病診斷、藥物輸送及疾病治療及其他相關主題外，未來台紐雙方應儘快尋求補助資源，並以現有的奈米生醫領域為基礎，以共同出資並成果的合作模式，才能在未來的合作上有事半功倍之效。

Biotechnology has now been recognized as the academic mainstream for the 21th century.

With scientists committing significant resources over the past decade, the application of nanotechnology in the field of biomedical technology has become an area of concern and a popular area of research . In recent years, Taiwan and New Zealand have actively promoted bilateral academic cooperation and exchanges, due to New Zealand's leading role in both agriculture and biomedical technology.

The purpose of this exchange workshop is to share the development experience of the two countries and achieve the following objectives:

1. To Strengthen the basis of mutual understanding and devote itself to the conclusions of the workshop first held in 2008.
2. Expand in aspects of biomedical technology and nanotechnology research fields.
3. Obtain the opportunity for co-operation within the nano-biomedical technology industry.
4. Mutual selection of research topics and the establishment of cooperation strategies.
5. The enhancement of the scholars' international reputation and academic achievement.

After a close contact between the coordinator from both sides –Dr. Pai-chi Li and Dr. Maan Alkaisi, the two countries were determined to hold a two-day workshop on November 3-4, 2011.

14 distinguished speakers were invited for the workshop, 8 from Taiwan and 6 from New Zealand, including such people as Dr. Pai-chi Li(NTU), Dr. Ja-An Annie Ho(NTU), Dr. Maan Alkaisi and Dr. Ricahrd Tilley. The speakers all made impressive speeches, and the event was well attended by 45 participants. The workshop brought technical professionals, academia and the general public together to share their views on its future development. It was successfully and well received by the participants.

The themes addressed at the workshop are as follow:

1. Nanoparticles applied in bio-imaging technologies and the application with life science and medical science.
2. Biomedical MEMS and Sensors
3. Nanomaterials and nanotechnology applied in disease diagnosis, drug delivery and disease treatment.
4. Other related subjects.

Base on the present nano-biomedical technology we have, we should look for other supporting resources and maintain the partnership by co-funding and collaborating to achieve higher levels of success in the future

伍 國際交流 International Exchanges

二、外賓參訪 International Visits

1. 2011/09/09
   Prof. Jonathan M. Cooper、Prof. Andrea Nolan, University of Glasgow

2. 2011/09/13
   Prof.Dr.ir. Antonius Franciscus Wilhelmus van der Steen, Biomedical Engineering, Erasmus MC Rotterdam
   Topic: Intravascular Imaging of Atherosclerosis

3. 2011/11/04
Dr. Maan Alkaisi/Richard Tilley/Vladimir Golovko/ Christian Soeller, Taiwan-New Zealand Workshop on Nanotechnologies for Bio-Imaging, Sensing, and Diagnosis

4. 2011/12/26
Prof. Saman Halgamuge, Melbourne School of Engineering, The University of Melbourne

5. 2012/03/28
張學工教授/謝震教授，臺大電資-清華信息 雙邊學術合作研討會

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 Barry Lam Hall, Room 405
醫學影像實驗室/磁共振影像頻譜實驗室 Medical Imaging Lab./Magnetic Resonance Imaging Lab.	陳志宏 Jyh-Horng Chen	明達館706 MingDa Building, Room 706
智慧型與精密運動控制實驗室 IPMC Lab.	陳永耀 Yung-Yaw Chen	明達館604 MingDa Building, Room 604
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
生醫系統與電磁實驗室 Biomedical System and Electromagnetism Lab.	張璞曾 Fok-Ching Chong	明達館702 MingDa Building, Room 702
生物資訊暨生物統計核心實驗室 Bioinformatics and Biostatistics Core Lab.	莊曜宇 Eric Y. Chuang	明達館701 MingDa Building, Room 701
醫用磁振造影實驗室 Magnetic Resonance in Medicine Lab.	鍾孝文 Hsiao-Wen Chung	明達館704 MingDa Building, Room 704
紅外線暨生醫奈米元件實驗室 Infrared and Bio-Chemical Nano-Device Lab.	管傑雄 Chieh-Hsiung Kuan	電機二館426 EE 2, Room 426
細胞行為實驗室 Cell Behavior Lab.	郭柏齡 Po-Ling Kuo	明達館707 MingDa Building, Room 707
生物醫學信號實驗室 Biomedical Signal Lab.	郭德盛 Te-Son Kuo	明達館 705 MingDa Building, Room 705
統計信號處理實驗室 Statistical Signal Processing Lab.	李枝宏 Ju-Hong Lee	電機二館553 EE 2, Room 553
薄膜電晶體實驗室 TFT Lab.	李嗣涔 Si-Chen Lee	電機二館451 EE 2, Room 451
超音波影像實驗室 Ultrasonic Imaging Lab.	李百祺 Pai-Chi Li	明達館731 MingDa Building, Room 731

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 EE 2, Room 450
醫用微感測器暨系統實驗室 Medical Micro Sensor and System Lab.	林啓萬 Chii-Wann Lin	展書樓605/608 Jan Su Hall, Room 605/608
人腦實驗室 Brain Imaging and Modeling Lab.	林發暄 Fa-Hsuan Lin	展書樓703 Jan Su Hall, Room 703
整合神經生理學實驗室 Integrative Neurophysiology Lab.	林則彬 Tzer-Bin Lin	中國醫藥大學附設醫院I棟6樓 China Medical University Hospital
奈米生醫光電實驗室 Nano-Biophotonics Lab.	孫啓光 Chi-Kuang Sun	電機二館R406A EE 2, Room R406A
超快光電實驗室 Ultrafast Optics Lab.	孫啓光 Chi-Kuang Sun	電機二館R407B EE 2, Room R407B
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 MingDa Building, Room 703
微奈米分析技術及系統實驗室 Micro/Nano Analytical Technologies & Systems Lab.	田維誠 Wei-Cheng Tian	明達館509 MingDa Building, Room 509
數位信號處理實驗室 Digital Signal Processing Lab.	曹建和 Jen-Ho Tsao	電機二館552 EE 2, Room 552
心臟輔助器實驗室 Ventricular Assist Device Lab.	王水深 Shoei-Shen Wang	臺大醫院 NTUH
非侵入式生理量測實驗室 Non-Invasive physiological Measurements Lab.	王唯工 Wei-Kung Wang	中央研究院物理研究所 Insitute of Physics, Sinica
臨床磁振影像實驗室 Clinical Magnetic Resonance Imaging Lab.	吳文超 Wen-Chau Wu	明達館 704 MingDa Building, Room 704
	楊泮池 Pan-Chyr Yang	臺大醫院 NTUH
	周迺寬 Nai-Kuan Chou	臺大醫院 NTUH

陸 實驗室及教師
Laboratories and Faculty

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	資訊館402 CSIE Building, Room 402
演算法與計算生物學實驗室 Algorithms and Computational Biology Lab.	趙坤茂 Kun-Mao Chao	資訊館432 CSIE Building, Room 432
數位相機與電腦視覺實驗室 Digital camera and Computer Vision Lab.	傅楸善 Chiou-Shann Fuh	資訊館328 CSIE Building, Room 328
	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 Life Science Building, Room 1105
生物資訊實驗室 Bioinformatics Lab.	高成炎 Cheng-Yan Kao	資訊館401 CSIE Building, Room 401
醫學資訊實驗室 Medical Informatics Lab.	賴飛羆 Fei-Pei Lai	資訊館346 CSIE Building, Room 346
演算法實驗室 Algorithmic Research Lab.	呂學一 Hsueh-I Lu	資訊館406 CSIE Building, Room 406
分子生醫資訊實驗室 Molecular Biomedical Informatics Lab.	歐陽彥正 Yen-Jen Oyang	資訊館410 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
生物資訊與化學資訊實驗室 Bioinformatics and Cheminformatics Lab.	曾宇鳳 Y. Jane Tseng	資訊館404 CSIE Building, Room 404

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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. 單一核苷酸多型性資訊運用的演算法設計
   Efficient Algorithms for Utilizing SNP information
2. 線上拓墣排序問題之快速演算法
   Fast Algorithms for Online Topological Ordering
3. 多重基因複製問題的快速演算法
   Faster Algorithms for the Multiple Gene Duplication Problems

計畫名稱：多重基因複製問題的快速演算法
補助單位：行政院國家科學委員會
計畫期間：2009/08/01-2012/07/31

在演化分子生物學裡，種系發展分析可協助理解不同生物間的演化關係。一棵種族樹可以用來代表一個種族集合之親緣關係；一棵基因樹則描繪出一群種族就某個基因家族所建立之親緣關係。由於複雜的演化過程，如：基因複製、水平基因轉移、染色體重組等，基因樹和種族樹之間可能產生不一致的地方，演化生物學家必須能進一步解釋這些不一致的地方。

前人以對應基因樹與種族樹的調和模式，來解釋這些不一致產生的原因。這方面有個重要的問題稱為「多重基因複製問題」，它將基因複製事件，從基因樹對應到種族樹。本計劃將探討多重基因複製問題上的兩個主題：一個主題稱為「事件叢集問題」，該問題要在種族樹上找出最少的地方，來放置所有應該產生的複製事件；另一個主題稱為「最少事件問題」，該問題要在種族樹上決定發生複製事件的樹點，使得複製事件的總數為最少。

我們將設計解決「事件叢集問題」的更快速解法，這問題已被證明是「樹區間覆蓋問題」的特例，透過調整整個樹的拜訪順序，我們希望能設計出這兩個問題的最佳解法。我們也將設計解決「最少事件問題」的更快速解法，主要是要加速下面四個步驟：(1) 計算最低共同祖先對應關係；(2) 找出所有帶頭的樹點；(3) 檢查帶頭樹點是否自由；(4) 修訂對應關係。我們進一步檢驗基因叢集裡的資料，從而建立一套更合適的模組，希望能有統一的理論可處理各式各樣的演化事件，如此得到的重建過程將更貼近實務需求。

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Project title: Faster Algorithms for the Multiple Gene Duplication Problemsn
Supported by: National Science Council
Project period: 2009/08/01-2012/07/31

In the evolutionary molecular biology, phylogenetic analyses help to realize the evolutionary relationship among various organisms. A species tree represents the phylogeny of a set of species, and a gene tree depicts the phylogeny among a gene family for a set of species. Due to complicated evolutionary processes such as gene duplication, horizontal gene transfer, recombination, etc., gene trees and species trees may be inconsistent. It is important for evolutionary biologists to explain the inconsistency between gene trees and species trees.

The reconciled tree provides the mapping between genes trees and a species tree that explains the inconsistency in the evolutionary history. The Multiple Gene Duplication (MGD) problem is to map gene duplications from the gene trees into the species tree and to cluster such mapped duplications into a few genome duplications. In this project, we study two variants of the MGD problems with different cost function measurements. Given are a set of gene trees and a species tree. The first problem, called the Episode-Clustering problem, is to find a minimum number of locations in the species tree for placing all duplications in the gene trees. The other problem, called the Minimum Episodes problem, is to assign duplication events to nodes in a species tree such that the total number of episodes is minimized.

We will design faster algorithms for the Episode-Clustering problem, which has been shown to be a special case of the Tree Interval Cover problem. By traversing the tree in an appropriate order, we wish to design an optimal algorithm for both problems. We will also design faster algorithms for the Minimum Episodes problem. We need to speed up the following four steps: (1) computing the LCA-mapping, (2) finding all leading nodes, (3) checking if these leading nodes are free, and (4) updating the mapping. We will examine the data in the gene clusters more closely and establish a more robust model for them. We will set up a unified theory for handling all evolutionary operations in order to make the reconstruction work in practice.

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生物資訊暨生物統計核心實驗室
Bioinformatics and Biostatistics Core Lab.

本實驗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) 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。因此實驗室的研究方向乃致力於增進基因晶片技術在生物醫學領域上的研究，研究範疇涵蓋晶片製備技術、影像擷取與分析、生物資訊學、資料管理，以及利用基因晶片分析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 has 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 technology in the biomedical field. Interests in our laboratory include microarray fabrication, image capture and analysis, bioinformatics, database management, and analytic technique to understand 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、生物資訊、癌症生物、輻射生物
Biochip, Bioinformatics, Cancer Biology, Radiation Biology

研究計畫 Research Projects

1. IGFBP5 與幅射線誘發相關效應之研究
   Study the relationship between IGFBP5 and radiation-induced effects
2. 優勢重點領域拔尖計畫-醫學卓越研究中心-生物資訊暨生物統計核心實驗室
   Bioinformatics and Biostatistics Core Facility
3. 研究不同輻射敏感性之肺癌細胞受輻射誘導後之基因表現改變以及探討 Notch pathway 如何影響肺癌細胞 CL1-0 與CL1-5 之輻射敏感性
   To study radiation-induced genomic instability and gene expression profiles in lung cancer cells with differential radiosensitivity and to investigate how HLJ1 modulates radiosensitivity in the lung cancer cell line CL1-0 and CL1-5
4. 微核醣核酸調控機制與其作用標的之預測
   Target prediction and regulation of microRNAs
5. 以基因體方式篩選台灣非吸菸女性肺癌病患甲基化變異
   Genome-wide Screening of Methylation Profiles in Non-smoking Female Lung Cancer in Taiwan

計畫名稱：IGFBP5 與幅射線誘發相關效應之研究
補助單位：行政院國家科學委員會
計畫期間：2011/08-2012/07

從許多的報告中已知輻射線照射主要會造成 DNA 傷害，進而誘發許多細胞反應包含細胞週期停止，細胞死亡或是細胞轉變。然而，從先前的研究中發現罹患遺傳性視網膜母細胞瘤的孩童，其外表正常雙親之皮膚纖維母細胞對游離放射線產生預期外的高放射線敏感現象。因此我們認為罹患遺傳性視網膜母細胞瘤的孩童的雙親之皮膚纖維母細胞，可能有還未被發現的基因調控機制與輻射線誘發相關細胞效應有關。從我們在2006 年發表於Cancer Research 期刊中的研究指出，利用 DNA 微陣列晶片技術，我們分析並挑選出 42 個與游離輻射誘發細胞敏感有關之基因。 在這些42個基因當中，IGFBP5 (Insulin-like growth factor binding protein 5)，其主要功能是與 insulin growthfactor (IGF) 結合進而調節 IGF 的功能，被選出作進一步研究其在人類皮膚細胞中與輻射敏感度效應之關係。在我們前期的實驗中發現，短期大量表現 IGFBP5 之人類纖維母細胞 (Hs68) ，對於游離輻射有較高的耐受性。此結果說明 IGFBP5 的確與人類皮膚纖維母細胞之游離輻射敏感度有關。因此，在本計畫中，我們將藉由穩定表現或是穩定抑制 IGFBP5 的人類細胞株來進一步探討 IGFBP5 與游離輻射誘發之各種細胞效應之間的關係。於第二年中，我們將要利用微陣列晶片技術來探討游離輻射所引發之IGFBP5 訊號傳遞路徑。最後，我們將利用 IGFBP5 的基因剔除鼠來進行游離輻射線對於IGFBP5 基因剔除鼠的效應。藉由細胞與動物實驗的研究，可以幫助我們了解 IGFBP5與其下游基因對於游離輻射所引發細胞反應之間的關係。

Project title: Study the relationship between IGFBP5 and radiation-induced effects
Supported by: National Science Council
Project period: 2011/08-2012/07

It is well known that ionizing radiation exposure can cause DNA damages, which are associated with series of cellular responses including cell cycle arrest, transformation, and cell death. However, an unanticipated radiation-induced hypersensitivity in normal skin fibroblasts derived from unaffected parents of children with hereditary retinoblastoma was discovered several years ago. In our previous study published in Cancer Research, 42 differentially expressed genes were identified as radiosensitivity related genes. Among those 42 genes, insulin-like growth factor binding protein 5 (IGFBP5), which functions as a carrier protein to regulate the activity of insulin-like growth factors (IGFs), is chosen for further investigation in human fibroblast cells. Our preliminary data showed that normal human fibroblast (Hs68) with transient IGFBP5 overexpression significantly increased the survival after irradiation compared to control cells. The result indicated that IGFBP5 may play a role in radiation-induced cytotoxicity. Therefore, in this study, we would like to establish IGFBP5 overexpressed or silenced normal human fibroblasts for further characterizing the relationship between IGFBP5 and radiation-induced effects. Moreover, DNA microarray analysis will be applied to study the signaling pathways of IGFBP5 in the cells with or without radiation treatment. The IGFBP5 knockout animal model will also be setup to investigate the function of IGFBP5 in response to radiation in vivo. Taken together, results from the cell and animal studies may help to better understand the role of IGFBP5 and its downstream signaling pathways in response to ionizing radiation.

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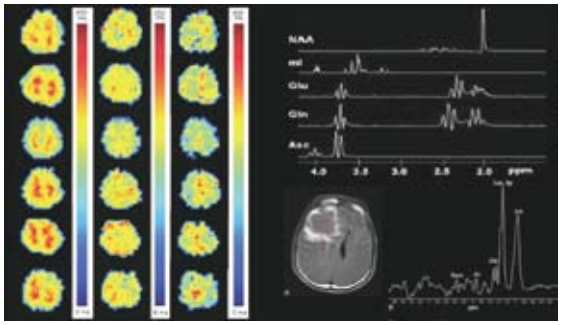
醫用磁振造影實驗室
Magnetic Resonance in Medicine Lab.

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12名，碩士班研究生2名。博士班畢業生21名，碩士班畢業生12名。目前進行中的研究主要有以下幾項：

1. 抗壞血酸之臨床磁振頻譜檢測技術開發
   抗壞血酸為人體內重要的抗氧化劑。本計畫預期以虛擬滴定、純量偶合頻譜編輯、巡弋迴訊運動校正等方式進行人體氫原子核磁振頻譜之活體腦部抗壞血酸檢測，並探討其精確度。
2. 數據共享之動態磁振造影加速
   本計畫針對動態磁振造影，擬以影片壓縮演算法、多心跳週期Unpack技術等數據共享法則，研發一系列動態影像加速擷取與影像重建之技術，以加速五至八倍為目標，並適用於型態變異與對比改變兩種不同之模式。

Founded in July 2000. Supervisor: Prof. Hsiao-Wen Chung. This lab currently has 12 Ph.D. students and 2 M.S. student, plus 21 Ph.D. graduates and 12 M.S. graduates. Research topics include:

1. MR spectroscopic techniques for ascorbic acid detection.
   Ascorbic acid is an important anti-oxidant in the human body. This project aims to use virtual titration, J-coupling spectral editing, and navigator echo motion correction techniques to explore the accuracy of proton MRS for ascorbic acid detection in the human brain in vivo.
2. Acceleration of dynamic MRI via data sharing.
   This project proposes data sharing methods using video compression principles and multiple cardiac phase Unpack techniques to reconstruct dynamic images with accelerated acquisition. Methods suitable for either morphological variations or contrast changes are developed, aiming at acceleration factors up to 5 or 8.



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. 數據共享之動態磁振造影加速
   Acceleration of dynamic MRI via data sharing.
2. 抗壞血酸之臨床磁振頻譜檢測技術開發
   Developments of clinical magnetic resonance spectroscopic techniques for the detection of ascorbic acids.

計畫名稱：數據共享之動態磁振造影加速
補助單位：行政院國家科學委員會工程處
計畫期間：2010/08/01-2013/07/30

本計畫為三年期前瞻性研究。重點在於動態磁振造影研發一系列加速擷取與影像重建之技術，利用各式數據共享演算法，在不明顯損失影像品質與診斷資訊前提下，以加速五至八倍為目標。三年間計畫之特定目標為：一、發展以影片壓縮技術為主軸的動態心臟磁振造影重建方式，並且不使用複雜隨機取樣以避免平衡穩定態自由旋進擷取技術之特有假影。同時亦根據重建法則，發展加速之心臟影像擷取技術。二、推展上述加速擷取原理，利用本研究群所提出之Unpack原理進行多心跳週期之動態影像，以進一步提高時間空間數據稀疏特性之利用效率。三、針對注射顯影劑之動態磁振造影與大腦功能性磁振造影（以上皆為型態類似但對比顯著變化之案例），提出不同的數據共享重建演算法，以達到與上述心臟影像（型態顯著變化但對比類似）近似的加速幅度。四、持續改進已特定設計之多因子評估方式，並依此比較上述發展之影像加速技術，提供臨床使用者作為標的適合性與最佳化應用之指引。本計畫之預期成果，短期內應可顯著提升臨床動態磁振造影之取像速度；長期方面，則將可望能發展出有助未來基礎與臨床放射診斷之新穎技術。

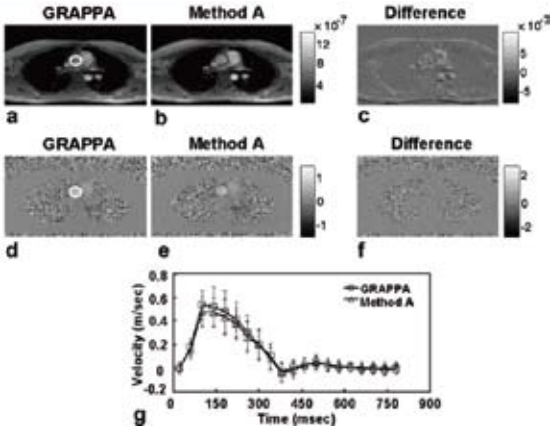
相位對比磁振造影對主動脈做流速分析之實驗結果。以商用化之 GRAPPA 與本研究所採用之加速方式 Method A 所得到之原始影像（a,b）以及對應之流速分佈圖（d,e）相比較，極為微小的差異（c,f）充分顯示出改變自動校正信號（ACS）擷取形式之可行性。（g）主動脈在心跳週期中以兩種方式所取得之流速變化情形。白色部份為流速量測之區域。

Project title: Acceleration of dynamic MRI via data sharing
Supported by: National Science Council, Engineering Division
Project period: 2010/08/01-2013/07/31

This is a three-year prospective project on a series of technical developments related to acquisition design and post-acquisition reconstruction of dynamic magnetic resonance (MR) imaging, with the aims to accelerate acquisition by a factor of five to eight without substantial loss of image quality and diagnostic information via various data sharing approaches. Chronologically, we shall accomplish the following specific aims: 1. We shall develop computational methods fully based on video compression techniques to design suitable strategies for cine cardiac MR imaging acceleration without using complicated random sampling pattern that could hurdle balanced SSFP imaging. We shall also develop cine cardiac imaging acquisition methods in accordance with the reconstruction algorithms. 2. We shall advance the acceleration principles to multi-cycle cardiac imaging using the Unpack principles, such that the utilization of spatial-temporal sparse pattern can be achieved at an even higher efficiency. 3. We shall propose data sharing reconstruction algorithms distinct from the above (similar contrast with different morphology) to accomplish similar acceleration rates for dynamic contrast-enhanced perfusion MR examinations and brain functional studies (different contrast with similar morphology). 4. We shall compare the performance of these acceleration methods using specially designed multi-factor evaluation methods, which will be under continuous refinements throughout execution of this project, such that the suitability of each individual method can be optimally realized by potential users in clinical practice. The anticipated results from this study, in the short term, should substantially increase the frame rate for clinical dynamic MR imaging acquisition. In the long term, a successful execution of this project should lead to novel technical improvements whose outcomes are potentially helpful for both basic and clinical radiological investigations.

The results of a direct implementation of accelerated phase-contrast MR imaging (Method A) for acquiring aortic flow. The comparable magnitude images (a,b) and phase images (d,e) of GRAPPA and Method A, reflected by a minor difference (c,f) in between, indicate the feasibility of the modification of ACS sampling pattern. （g）The quantified velocity curves of GRAPPA and Method A. White circle: ROI for velocity quantification.

代表圖及中英文說明：



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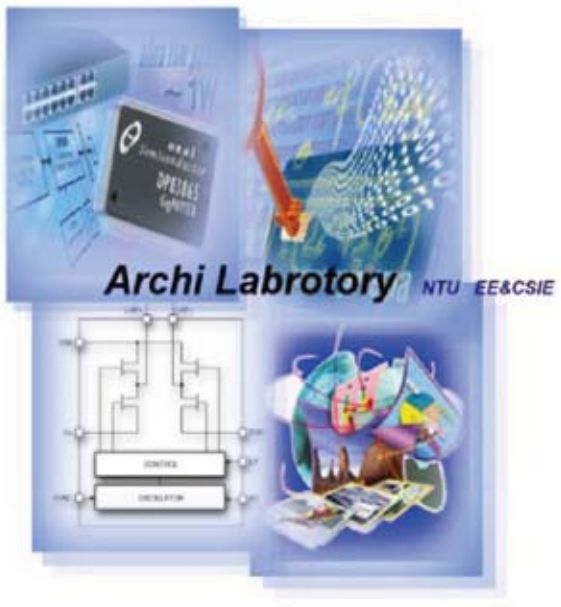
醫學資訊實驗室
Medical Informatics Lab.

本實驗室成立於1987年，由賴飛羆教授所領導的研究群組成。實驗室成員包括博士班13人，碩士班15人。本實驗室研究領域廣泛，實驗室創立初期以研究「計算機結構」，「低功率系統晶片設計」為主，近年來改以醫學資訊為主要目標，本實驗室的研究方向包含：

1. 電腦與通訊網路安全機制研究
2. 醫學資訊

This Lab. was established in 1987 and Professor Feipei Lai works together with 13 Ph.D. students and 15 master students. The major research areas include Security, and Medical Informatics. Our Lab. has cooperated with numerous IT companies and other overseas universities including Dortmund University in Germany, Calgary University in Canada and Mongolian University of Science and Technology in Mongolia.



主要研究領域 Major Research Areas

資訊安全、醫學資訊
Information Security, Medical Informatics

1. 自動化低功率及低漏電流 內容可定址記憶體 產生並模擬及驗證工具集(2009/08/01–2012/07/31)
   An automatic tool set for generating, simulating and verifying low power and low leakage content addressable memory
2. 開放式知識探勘平臺 (2009/08/01–2012/07/31)
   Sharable Knowledge Mining Platform
3. 醫療資訊探勘 (2009/08/01-2012/07/31)
   Data Mining on Healthcare
4. 連續性個人化健康照護整合平台 (2011/06/01-2012/06/30)
   Continuous, Personalized Healthcare Integrated Platform

計畫名稱： 開放式知識探勘平臺
補助單位： 行政院國家科學委員會
計畫期間： 2009/08/01-2012/07/31

醫療資訊系統的價值在於協助醫護人員用較快速度及較少的成本處理醫療事務，可讓組織有效率的運作發揮組織最大的功能，造福更多病患；隨著資訊系統長期運作，在系統背後累積大量的電腦化數據，如能進一步進行資料探勘，則可將原始資料(Data)轉化成有用的知識(Knowledge)，產生更大的附加價值；例如分析醫令順序以及檢驗、檢查內容可以探勘出臨床路徑(Clinical pathway)及臨床指引(Clinical guideline)，如此能進一步提升醫療品質及降低醫療成本。如能採用醫療資訊相關標準進行研究平台的建立，則研究成果可分享給其他的醫療機構應用。就台大醫院而言，其醫療案例既多且廣，已具初步資料探勘所需資料，且台大醫院之醫療資訊系統遵循 HL7、DICOM、ICD 等國際標準，若能以此資料庫及標準化的系統為基礎建立研究平台，並將研究成果以標準化的方式表示，則能將此成果分享給其他醫療機構。另一方面，其他醫療機構之資料也能經標準化的格式傳輸至此研究平台，使用平台上的資料探勘、知識發現等模組。

關鍵詞：醫療資訊系統、資料探勘、知識發現、臨床路徑、臨床指引

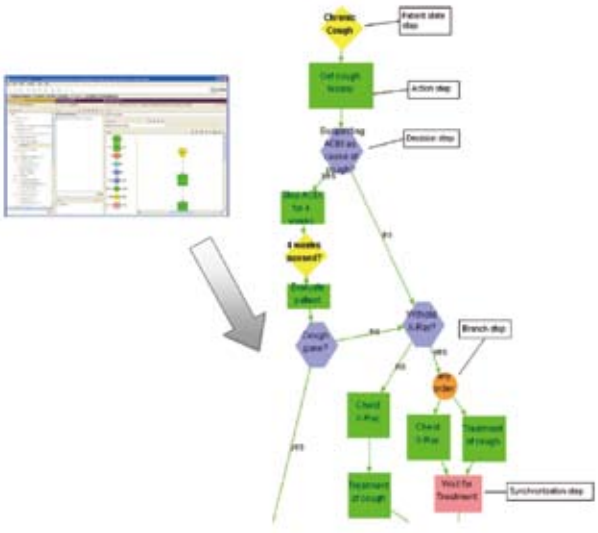
Project title: Sharable Knowledge Mining Platform
Supported by: National Science Council
Project period: 2009/08/01-2012/07/31

The basic value of health information systems is to support medical related workers to deal with their jobs more quickly and with less cost. Then, the health information systems can let organization operate more efficiently and get its best efficiency. Finally, the systems can bring a great benefit to patients. With the operation of the information system for a long time, there is a great amount of computerized data stored in the system. After doing data mining focused on these data, we can extract knowledge from these databases and bring more and more additional value.

For example, if we analyze the sequence of the medical orders and the content of the laboratory and observation and we can extract the knowledge about the clinical pathway and clinical guideline. Therefore, we can improve the quality of the health care and reduce the cost. If the research platform is built based on medical related standards, then the research results can be shared to other medical related institutions. There are numerous and various cases in the NTUH (Nation Taiwan University Hospital), and the database contains the needed data used by data mining. Besides, the health information system in NTUH follows many international standards such as HL7, DICOM and ICD. If we can build the research platform based on the database and the standardized systems, then we can share the study results to other medical institutions. On the other hand, other medical institutions can upload their data to the platform through many standardized format of transmission, and then they can use the module of data mining and knowledge discovery in the platform.

Keywords: health information system, data mining, knowledge discovery, clinical pathway, clinical guideline

代表圖及中英文說明：



使用Protégé 編輯由GLIF3 所表示之慢性咳嗽之臨床指引

計畫名稱：自動化低功率及低漏電流內容可定址記憶體產生並模擬及驗證工具集
補助單位：行政院國家科學委員會
計畫期間：2009/08/01-2012/07/31

內容定址記憶體由於因應現在網路技術要求，而日益龐大，導致相關模擬軟體所需消耗時間越來越多。且因製程技術進步，臨界物理極限導致元件漏電流效應益發嚴重，為了解決這個問題，並有效推斷漏電流所帶來的功率消耗影響，我們的計畫中提出如何在相對精準的情況之下，能夠快速的對內容定址記憶體做出初步模擬，來達到設計快速驗證的目標。在這三年的計畫，我們主要研究課題有三個方面：(1)利用 SystemC 去實作內容定址記憶體的高階模擬軟體，用意主要在快速初步模擬出對整體架構的效能與可行性評估、功率消耗評估以及使用 SystemC 做出模組自動合成軟體。(2)提出一個完整的電路程式碼合成軟體可用來產生內容定址記憶體相關進一步精確模擬中所需所有的程式碼，如 SPICE 程式碼、測試參數等等。在自動合成出的程式碼當中，拿去做更精確的驗證模擬，並在此時解決製程先進所帶來的漏電流問題。(3)提出一套可自動去驗證出電路中會產生的各種寄生效應的軟體，用此軟體去評估我們所設計的 CAM 架構所會產生的寄生性的電容、電感、電組的相關效應，並將這些參數輸入 Cell Library 當中，以達到在初步驗證模擬時，即可藉由 Cell Library 當中的模組得知其相關效應。

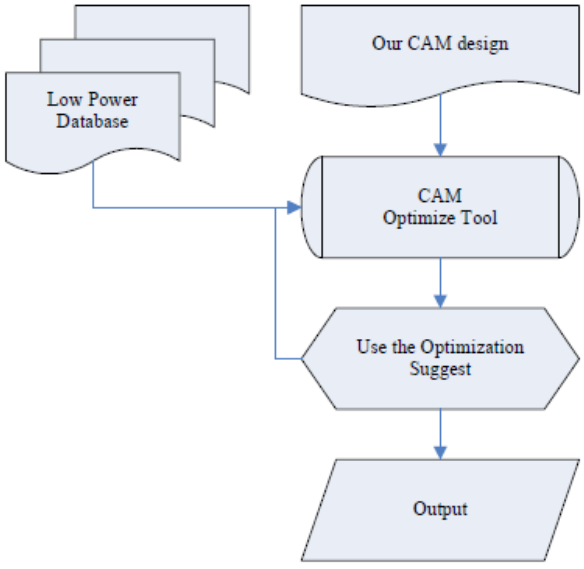
Project title: An automatic tool set for generating, simulating and verifying low power and low leakage content addressable memory

Supported by: National Science Council

Project period: 2009/08/01-2012/07/31

In the generation of modern network, people need more complex technology of content addressable memories to solve the problem of network transmission. Therefore, the architecture of content addressable memories operates at higher frequency and the number of transistors increases very hugely and the time designers spend to simulate becomes longer and longer. As a result of process technology upgraded, devices leakage current become more serious. In order to reduce the simulation time, and estimate the effect of leakage, which brought about to the impact of power consumption, we need to produce a kind of software able to reach a goal of fast simulation with reasonable accuracy. Our researches focus on three main topics in three years. First, we will design a kind of high level simulation software that can fast simulate the performance, the reliability, the power dissipation of CAM architectures with reasonable accuracy and to produce a model of auto-composed software with SystemC. Second, we will do research on a complete circuit source-code generation software, such as SPICE code, testing parameter, etc in order to produce all needed software codes in the CAM simulation. Moreover, we take these auto-composed source codes to simulate with high accuracy. Then we will propose some methods to solve the problem of leakage current. Third, we will do research on a kind of software which is able to calculate all the effects in layout and make use of these data to create the cell-library models. Therefore, we will know these efforts of post-simulation in the initial circuit simulation.

代表圖及中英文說明：



架構最佳化流程

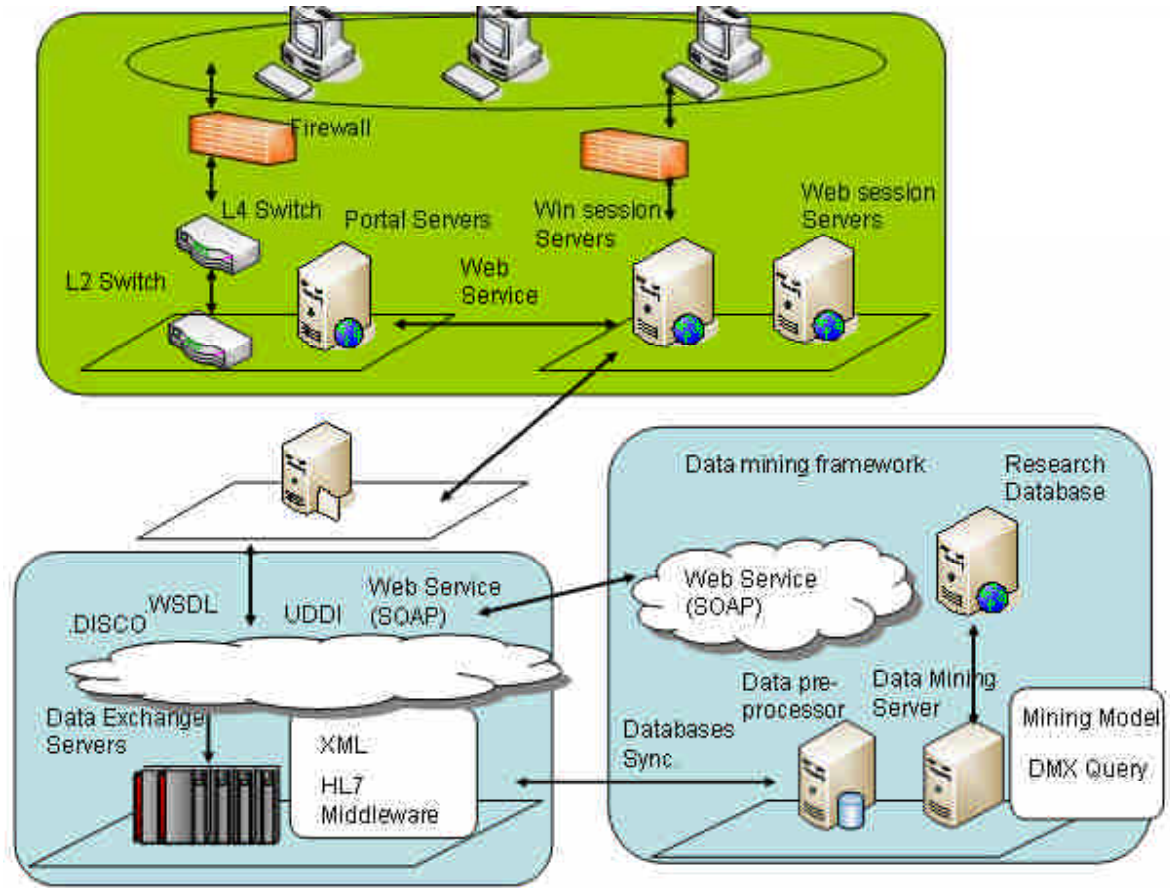
計畫名稱： 醫療資訊探勘
補助單位：行政院國家科學委員會
計畫期間： 2009/08/01-2012/07/31

隨著醫療水準的提升，全球逐漸邁入老年化人力結構，如何提高醫療資源運用效率---提高治癒率及降低醫療成本成為國內外醫院努力的目標。而這兩個目標可以從疾病的早期發現、標準化的治療流程著手。故近年各家醫院無不投入大量的人力物力進行臨床路徑規劃、臨床指引的設計及各項檢驗數據的判讀。在醫療資訊系統累積大量的電腦化數據，如能進一步進行資料探勘，則可將原始資料 (Data)轉化成有用的知識 (Knowledge)，產生更大的附加價值；例如分析醫令順序以及檢驗、檢查內容可以探勘出臨床路徑 (Clinical pathway)及臨床指引 (Clinical guideline)，如此能進一步提高治癒率及降低醫療成本。每個國家因為地理位置、氣候、種族、生活習慣、飲食文化、社會型態不一，故易罹患的疾病及治療的方法不同，但人工智慧模型貴於可從資料學習背後代表的意義，從不同的資料可習得不同的知識；學理上可跨越醫院、國家、種族等藩籬，此次能有機會與蒙古國共同進行此研究計畫，除了促進國際學術合作外，亦可驗證此特性，此計畫研究成果有助於將資料探勘等人工智慧模型在醫療系統方面的應用推廣到全世界，以發揮更大的效益。

Project title: Data Mining on Healthcare
Supported by: National Science Council
Project period: 2009/08/01-2012/07/31

With the improvement of health care quality, the world is gradually become an aging society. How to improve the efficiency of medical resource utilization, that is, to increase the cure rate and reduce health care costs become the objective of the efforts of hospitals. The two objectives can be achieved by early detection of diseases and standardization of treatment processes. Therefore, in recent years, hospitals have invested a lot of manpower and resources to conduct the clinical pathway planning, design the clinical guidelines and interpretation of diagnosis data. With the operation of the health information systems for a long time, there is a great amount of computerized data stored in the system. After doing data mining focused on these data, we can extract knowledge from these databases and bring more and more additional value. For example, if we analyze the sequence of the medical orders and the content of the laboratory and observation and we can extract the knowledge about the clinical pathway and clinical guideline. Therefore, we can improve the quality of the health care and reduce the cost. Each country as geographical location, climate, race, living habits, diet, culture, social patterns are different, so the disease risks and treatment methods are also different. But the artificial intelligence models can extract the knowledge from the huge raw data. The models can learn different knowledge from different raw data. In theory, the learning models can apply on different hospitals, countries and races. It's great to have this opportunity to work with the academic institution in Mongolia to carry out this joint research project. Not only to promote the international academic cooperation, but also to prove the artificial intelligence models robustness. The results of this project will contribute the artificial intelligence models such as data mining technology in health care applications to the world.

代表圖及中英文說明：



醫療資料探勘平台系統架構圖

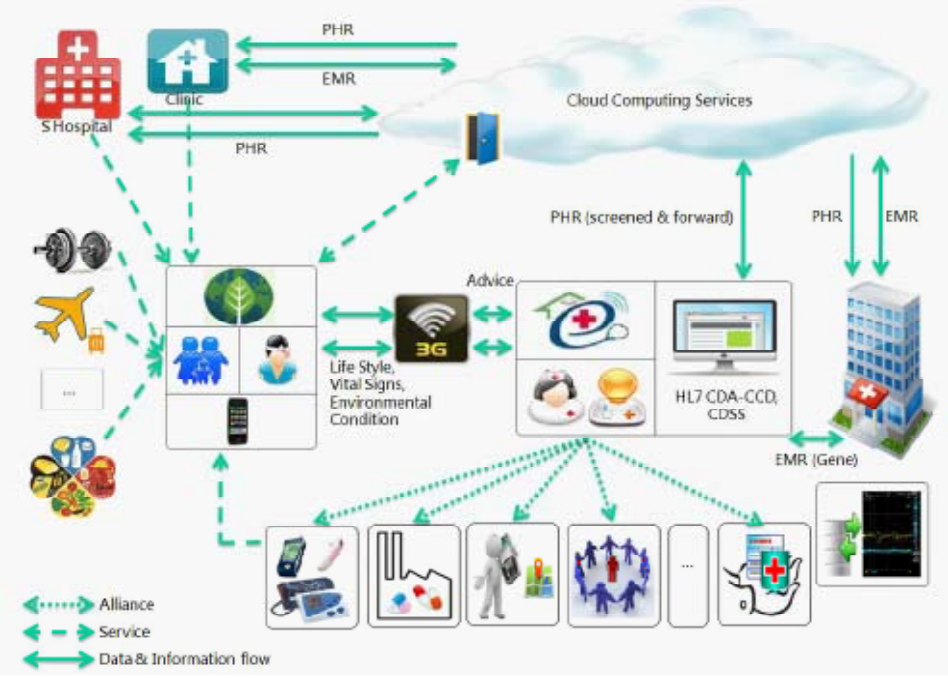
計畫名稱：連續性個人化健康照護整合平台
補助單位：行政院國家科學委員會
計畫期間：2011/06/01 ~ 2012/06/30

隨著民眾健康意識高漲，從過去疾病治療轉換為預防、健康促進的健康觀念，同時隨著醫療技術進步，民眾平均餘命上升，慢性疾病逐漸成為民眾主要的健康問題。民眾健康照護從疾病治療走向預防醫學，不再侷限在看診、診治的單一事件，而走向具備連續性的健康促進。我國中央健保局於民國90年10月起陸續推出子宮頸癌、乳癌、肺結核、糖尿病、氣喘等五種疾病的個案管理加成給付及疾病套裝組合方案，提升個案管理的推行誘因，顯示醫療服務的轉型，個案管理與個人化醫療照護的重要性。面對醫療型態的轉變，資訊科技成為提供更為連續性的照護途徑。同時民眾對於健康的觀念改變，漸漸希望對於自己的健康治療與處置有更多的瞭解與參與，並且積極的管理自己平日的健康狀態。

本計畫的目的在於建立一連續性個人化健康照護整合平台，結合醫療機構之照護、個案管理與生理監測之連續性個案管理照護資訊平台，以及個人化預防健康管理網路資訊平台，將醫療照護以及健康促進延伸至民眾身邊，提高醫療的可近性，提供更為連續性的醫療照護網絡。透過整合醫療院所既有之醫院資訊系統(Healthcare Information System, HIS)，連續性個案管理照護資訊平台，以及個人化預防健康管理網路資訊平台，提供更為連續性的個人化健康照護整合平台。

本團隊曾於2009年進行台大醫院出院病人遠距醫療照護中心的營運模式與資訊平台的建置，與多家生理監測儀器廠商合作，建立創新遠距照護中心之營運模式，並擁有建置台大醫院HIV個案管理照護資訊系統的經驗，於本研究領域已有相當的經驗與基礎。未來希望透過本計劃延續且擴張提供服務的範疇，推廣至糖尿病個案管理照護，建置個人化預防健康管理網路資訊平台，提供連續性且個人化的健康照護管理，提昇全民健康。

代表圖及中英文說明：



Project title: Continuous, Personalized Healthcare Integrated Platform
Supported by: National Science Council
Project period: 2011/06/01 ~ 2012/06/30

As the people arouse attention towards their own health status, the healthcare industry has transformed from single event physician visit or therapy, to continuous prevention health improvement. The medical technology has improved our life expectancy. Chronic diseases have become the main cause illnesses for the public. Continuous, personalized following up and nonstop health status monitoring service are required to effectively improve from the complexity of the disease. A new form of comprehensive healthcare service solution is needed.

Our project aims to construct a comprehensive platform, integrating the medical record from the hospital, personalized information from individual case management, and self-health management information from a personalized web portal, mobile platform, and forming a business model in order to facilitate care delivery. The project provides an infrastructure towards a continuous, personalized healthcare service. The project is divided in to four subprojects. 1) Personalized health information portal. 2) Continuous, personalized case management information system. 3) Wireless communication with device and mobile phone application. 4) Continuous, personalized healthcare integrated service and business model reform.

The team had experience in construction of the comprehensive telehealthcare information system, and practiced a business model in National Taiwan University Hospital. Also, the team had experience in development of a disease management information system. We are capable in the domain proposed, and are willing to extend the service with this project, to build a continuous, personalized healthcare integrated platform, to improve medical accessibility and health status without interrupting usual life.

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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. 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
   Three-Year Plan for Developing Key Technologies of Diagnostic Ultrasound
2. 明基友達集團臺大產學合作研究中心基金-超音波先進影像技術
3. 全光學式血管內超音波及光聲影像探頭與系統研究與開發
   All optical based intravascular ultrasound/photoacoustic imaging: scanhead and system design and Development
4. 使用多模式分子影像探針量化研究超音波標靶治療
   Quantitative study of US based targeted therapy: the use of US/PET and US/MRI molecular probes

計畫名稱：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
補助單位：經濟部
計畫期間：2011/11/01 ~ 2014/10/31

本計畫之目標為開發診斷超音波關鍵技術，為創新之全軟體式陣列成像架構，可以在可攜式之影像平台上實現先進之影像功能，具有高度之市場競爭力與臨床價值。本計畫架構及工作項目如下：

本計畫之成果，不僅將成為領先世界之關鍵技術，亦將成為全世界首創之軟體可攜式醫療影像系統，極具意義。而可攜式可適性影像系統，亦將延伸可攜式系統之應用層面，提升醫學使用之價值。同時，本計畫將與相關企業串連整合，形成緊密之產業供應鏈，發揮加乘之綜效，協助國內醫材產業技術提升與市場開拓。

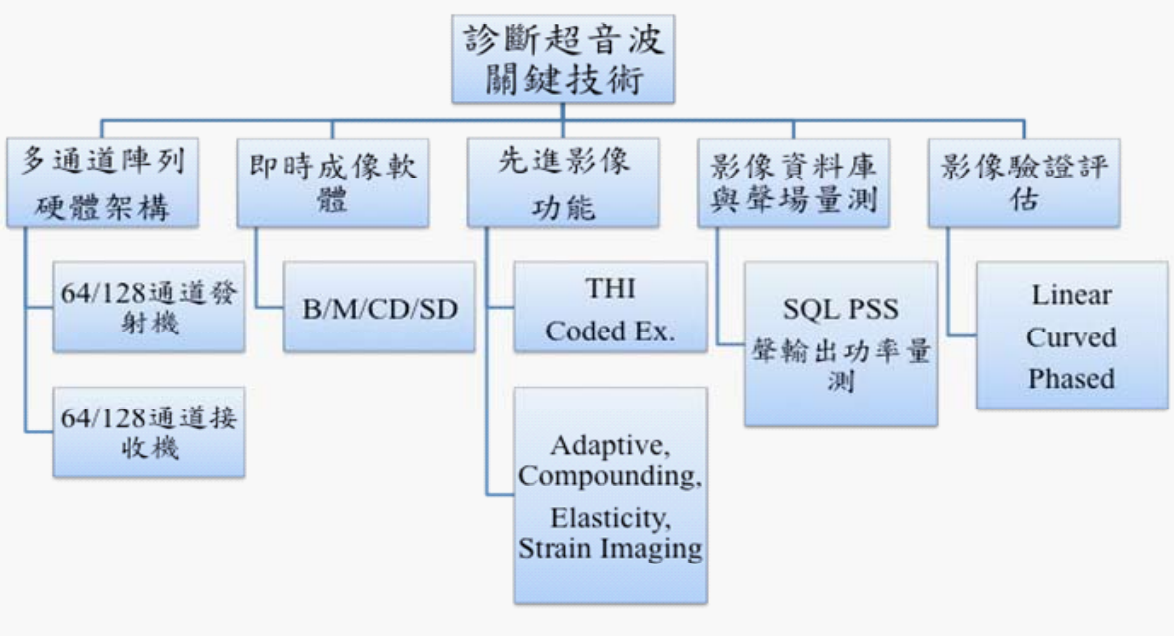
Project title: Three-Year Plan for Developing Key Technologies of Diagnostic Ultrasound
Supported by: Ministry of Economic Affairs
Project period: 2011/11/01 ~ 2014/10/31

The main goal of this project is to develop a next-generation all-software ultrasound array imaging platform, and implement advanced imaging technologies on this platform. With these, high-end portable ultrasound systems with high clinical values and market potentials can be realized and commercialized. Specifically, this project includes the following major items:

- All software array imaging front-end subsystems.
- GPU based mid-end and back-end subsystems.
- Implementation of high-speed digital data transfer.

- Realization of all major imaging modes, including B/M/CD/SD.
- Development of advanced imaging technologies, including adaptive imaging, tissue harmonic imaging, coded excitation and elasticity imaging.
- Construction of sound field measurement setup.
- SQL-based relational database for image evaluation and optimization.

The technologies that will be developed in this project will not only be world-leading, they will also be instrumental to the success of a high-end medical ultrasound industry in Taiwan.



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Professor, Graduate Institute of Biomedical Electronics and Bioinformatics
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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系統生物學的研究上。在過去幾年中，實驗室團隊提出三個創新的機器學習演算法，並運用這些演算法以發展以下幾項生物資訊軟體工具：

1. HomoClust—以蛋白質序列比對為基礎建構蛋白質家族的階層架構
2. iPDA—蛋白質非穩定結構區段之預測
3. Proteminer and Protemot—以局部蛋白質結構比對為基礎預測蛋白質功能
4. MEDOCK—模擬蛋白質與配體嵌合
5. Prote2S—預測蛋白質二級結構
6. ProteDNA—預測轉錄因子上與DNA鍵結殘基

The Molecular Biomedical Informatics (MBI) laboratory focuses on design of advanced machine learning algorithms for systems biology research. During the past few years, the MBI team has proposed three innovative machine learning algorithms and has exploited these algorithms to develop various bioinformatics software tools including:

1. HomoClust — construction of protein family hierarchy based on sequence alignment;
2. iPDA — prediction of disorder regions in protein sequences;
3. Proteminer and Protemot — prediction of protein functional sites based on local structural alignment;
4. MEDOCK — emulation of protein-ligand docking;
5. Prote2S — prediction of protein secondary structures based on the polypeptide sequence;
6. ProteDNA — prediction of sequence specific DNA binding residues in transcription factors.

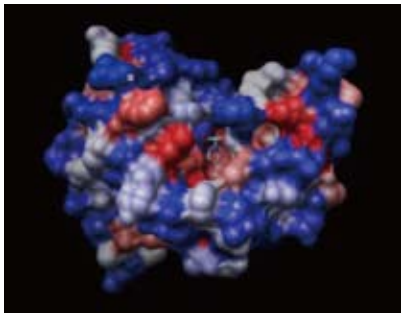
主要研究領域 Major Research Areas

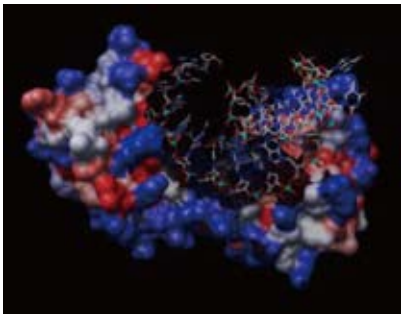
生物資訊學、機器學習
Bioinformatics, Machine Learning

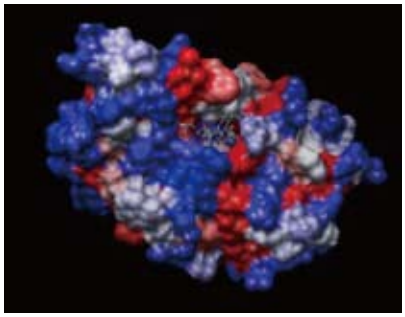
研究計畫 Research Projects

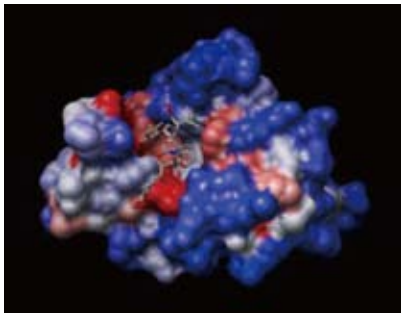
1. 以自動知識擷取為基礎之計算功能性蛋白質體學
   Computational functional proteomics based on automated knowledge extraction
2. 計算生物學先導型研究計畫
   Pilot Research Program of Computational Biology

計畫名稱：以自動知識擷取為基礎之計算功能性蛋白質體學
補助單位：行政院國家科學委員會
計畫期間：2009/08/01 – 2012/07/31









本整合計畫的終極目標，是設計以精確的能量評估函數為核心的生物資訊預測軟體，以期能精確地分析蛋白質/蛋白質交互作用（protein-protein interactions簡稱PPI）、蛋白質/DNA交互作用（protein-DNA interactions）、以及蛋白質/配體交互作用（protein-ligand interactions）的細節。由於本團隊將建構下列3項獨特的基礎，預期本計畫中所提出的能量評估函數將具有突破性的精確度：

1. 運用資訊擷取(information extraction)技術，以自動化的方式由文獻中擷取蛋白質結合強度的資訊，以建立最完整的蛋白質結合強度資料庫；
2. 確認影響結合自由能的關鍵因子並設計創新且高效率的評估演算法；
3. 設計創新性的非線性迴歸演算法以及多變量分析演算法。

以本計畫所提出的精確能量評估函數為核心，本團隊將設計最先進的分子嵌合模擬軟體、蛋白質功能預測軟體、蛋白質結合區預測軟體、DNA上轉錄因子結合區預測軟體等。由於蛋白質在所有的生化反應與生理作用中均扮演了最基礎的角色，因此本計劃所研發的生物資訊預測軟體，不僅能夠被有效地運用於許多生命科學的基礎研究上，同時亦可以提供分子診斷與醫療(molecular diagnosis and therapy)研究上創新性的分析工具。

Project title: Computational functional proteomics based on automated knowledge extraction
Supported by: National Science Council
Project period: 2009/08/01-2012/07/31

The ultimate objective of this integrated project is to design advanced bioinformatics software for analyzing the details of protein-protein interactions, protein-DNA interactions, and protein-ligand interactions based on the accurate energy scoring functions proposed by this integrated project. It is anticipated that with the following distinctive frameworks, the energy scoring functions developed by this integrated project will feature superior accuracy in comparison with the existing ones:

1. Construct comprehensive binding affinity databases of protein-protein, protein-DNA, and protein- ligand interactions with automatic information extraction technology;
2. Dentify critical energetic terms and design innovative and efficient evaluation algorithms;
3. Design advanced non-linear regression algorithms as well as novel multivariate analysis algorithms.

With the advanced energy scoring functions, we will then move to design innovative computational methods and algorithms for implementations of molecular docking and predictors of protein functions, protein binding sites, and TFBS (transcription factor binding sites). As proteins play the fundamental roles at the molecular level in essentially all physiological processes, the advanced bioinformatics software designed in this integrated project will not only facilitate the investigations on many important physiological processes but also provide innovative analytical mechanisms for studies on molecular diagnosis and therapy.

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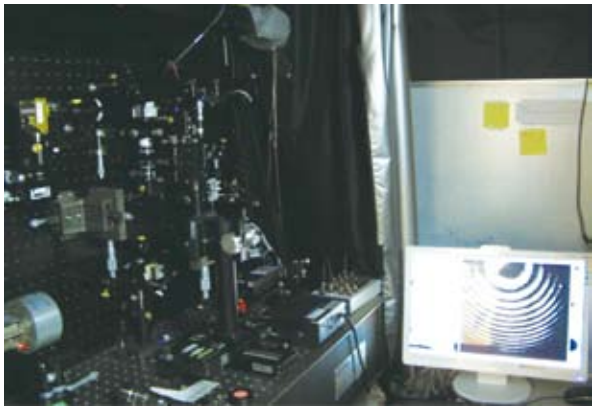
生醫光譜與影像實驗室
Biomedical Optical Spectroscopy and Imaging Lab.

我們實驗室的研究方向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分析以及光學影像系統的應用，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。長期的目標是針對疾病(特別是癌症)的早期徵兆，發展低侵入性的診斷儀器系統。

The research focus in our laboratory is to push forward the technologies of sensitive optical detection and imaging systems and utilize these systems to aid biomedical research and develop new diagnostic tools. The long-term objective is to develop minimally invasive diagnostic tools for early detection of disease such as cancer.



主要研究領域 Major Research Areas

生醫工程、生醫光電

Biomedical engineering, Biomedical Optics

研究計畫 Research Projects

1. 以結合光纖之高光譜影像術進行非侵入性癌前病變與癌症早期診斷
   Noninvasive early diagnosis of precancer and cancer using fiber-optic-based hyperspectral imaging
2. 癌症與癌前病變細胞之結構與其散射光特性之關連性研究
   Studying the relation between structure and light scattering properties of cancer/precancerous cells

計畫名稱：以結合光纖之高光譜影像術進行非侵入性癌前病變與癌症早期診斷

補助單位：行政院國家科學委員會

計畫期間：2010/08/01–2013/07/31

本三年期研究計畫之目的是運用反射光譜與螢光光譜的技術，發展新穎的非侵入式癌(前)病變的早期診斷工具。現有的應用光譜進行非侵入式診斷主要有兩種方式，使用單點的光纖探頭測量組織局部區域的平均光譜，以及使用少數幾個特定波長的濾片來擷取大範圍的組織影像。本研究方法的優點在於結合光纖束與高光譜影像系統，可快速擷取組織上較大範圍內不同位置的光譜信號，因此同時具有兩種現有技術的優點，再利用蒙地卡羅數值模擬開發資料分析工具，將組織內不同深度的光學特性如散射、吸收與螢光強度定量，以輔助早期病灶之診斷。本計畫選定口腔與皮膚的癌(前)病變作為測試標的，由於組織的影像資訊是經由光纖束傳導到高光譜影像系統，不需要使用複雜且昂貴的微小化掃描機制造影，因此未來若使用與內視鏡的工作通道相容的光纖探頭，便可進一步將此技術廣泛應用在消化道黏膜上的早期癌病變檢查。我們將建構可移動的高光譜顯微影像系統，並使用具有跟組織的散射與吸收係數相近的仿體，驗證此系統測量到的光譜影像資料與組織光學參數的關係。然後將進行動物實驗，以致癌物誘發小鼠皮膚癌以及倉鼠口腔癌的動物模式，在致癌的不同階段收集光譜影像資料，並在測量的位置做組織切片以提供組織分層結構與病理診斷等資訊，協助開發與驗證用以分析組織深度與光學參數的工具。最後將進行先導性人體實驗，以評估此新穎儀器與資料分析方法作為輔助偵測癌(前)病變工具之可行性，並與現有方法比較其準確度。

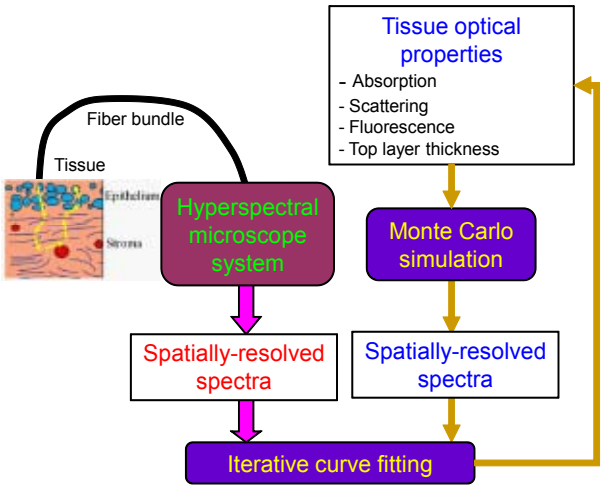
Project title: Noninvasive early diagnosis of precancer and cancer using fiber-optic-based hyperspectral imaging

Supported by: National Science Council

Project period: 2010/08/01–2013/07/31

The objective of this proposed three-year project is to develop a novel non-invasive system based on reflectance and fluorescence spectroscopy for early detection of precancerous and cancer lesions. The major novelty of our approach is the hyperspectral imaging capability that enables simultaneous acquisition of spectra from hundreds to thousands of separated locations on tissue surface through an imaging fiber-optic bundle. Compared with existing point-probe optical spectroscopy systems, the proposed method covers a larger area of tissue and has the ability to obtain depth-resolved tissue optical properties and fluorophore concentration for more accurate

diagnosis. Compared with multispectral imaging systems developed for in vivo diagnosis, our approach has higher spectral resolution which facilitates extraction of tissue optical properties. We will build a movable hyperspectral imaging system incorporating an imaging fiber-optic bundle to relay the spatial information from tissue to the rest of the instrument, which eliminates the need to miniaturize the scanning mechanism so the probe can be made to be compatible with endoscopes. Reflectance and fluorescence spectra will be measured from tissue mimicking phantoms with known optical properties and geometry and validated with theoretical predictions obtained by Monte Carlo simulations. To investigate the feasibility of the proposed method to obtain diagnostically relevant tissue information in vivo, we will use animal models of oral and skin cancers to investigate the relation between dysplastic changes in tissue and the measured spectra. Monte Carlo-based data analysis methods will be developed to solve the inverse problem of obtaining tissue optical properties from measured spectra. Histopathologic information of the measured tissue sites will be provided as the gold standard for diagnosis. Finally, we will conduct pilot in vivo studies on the skin and the oral mucosa to determine whether the unprecedented spatial-spectral information can improve the discrimination between normal tissue, benign lesion, various degrees of dysplasia and cancer. We believe that successful completion of the research could lead to future development of a clinical tool which can detect the presence of epithelial precancer and provide information about the stage and the extension of the lesion.



代表圖及中英文說明：

組織光學參數量化流程：以結合光纖束之高光譜影像系統，擷取組織表面的漫反射與螢光光譜影像資訊，並與蒙地卡羅數值模擬工具得到的數據相比，達到組織光學參數之定量。

Flow of quantifying tissue optical properties: spatially-resolved reflectance and fluorescence spectra measured with a hyperspectral microscope system are fitted with Monte Carlo simulation results to estimate the tissue optical properties

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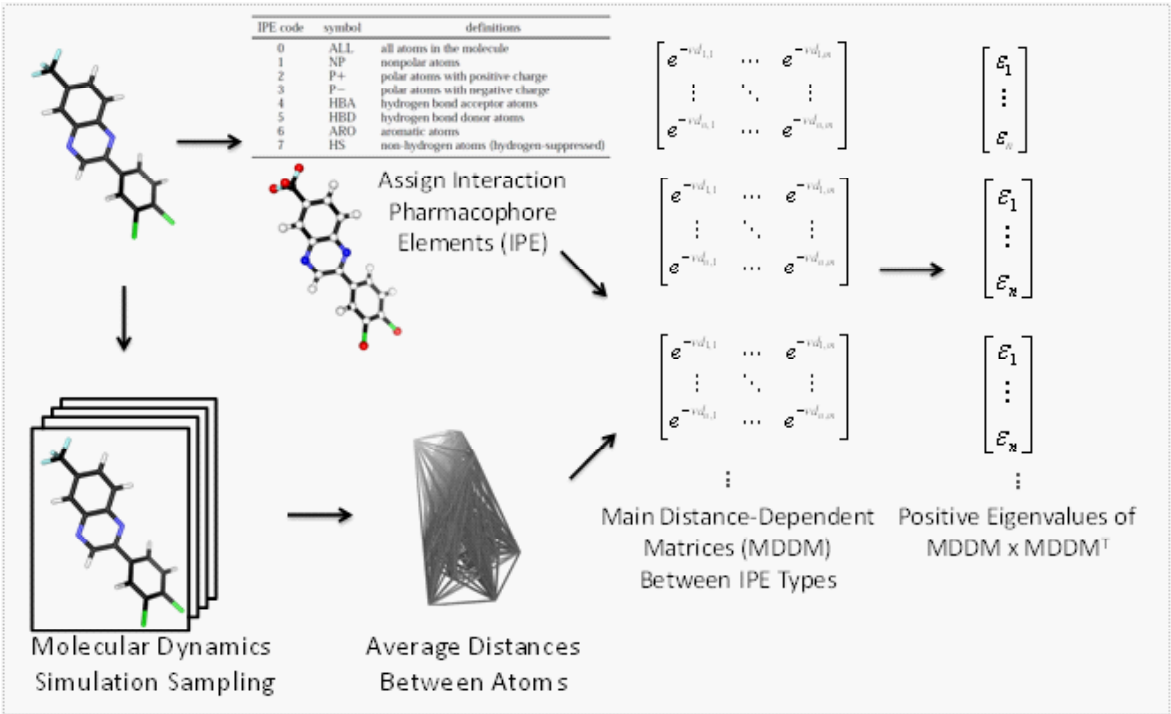
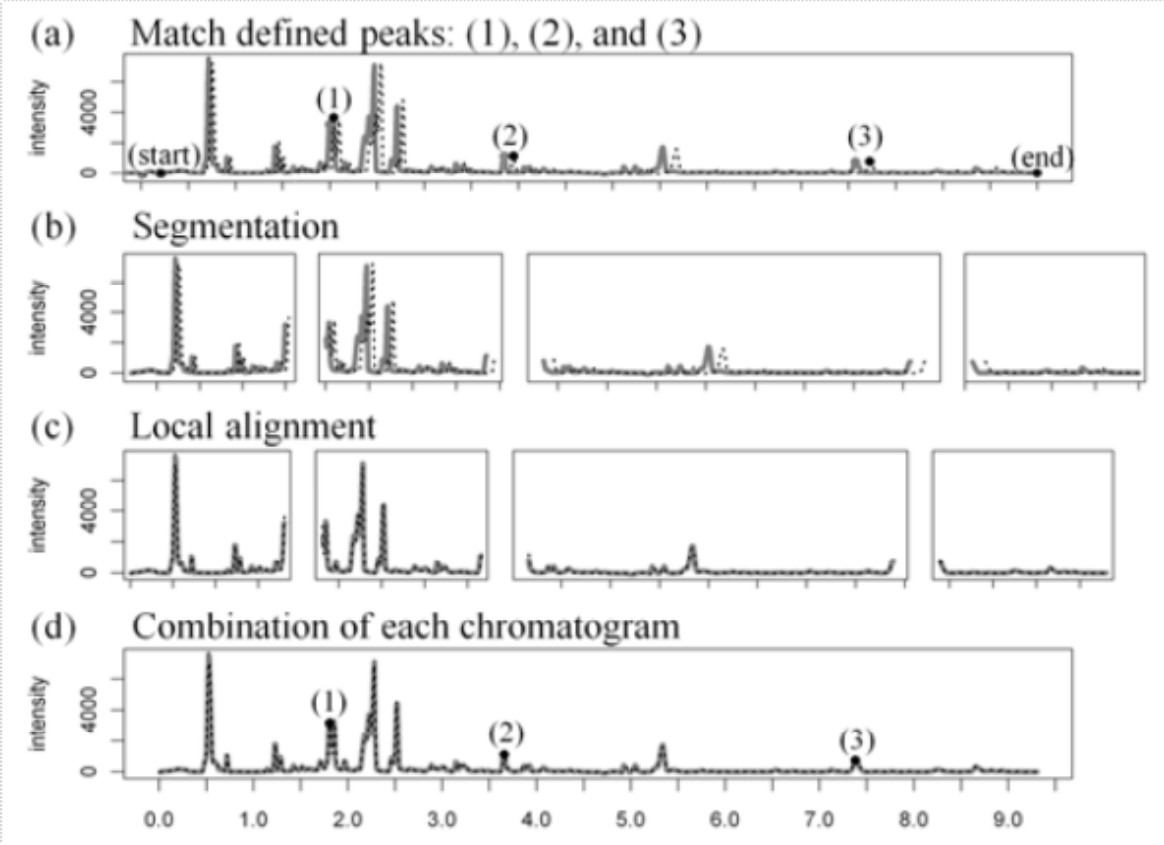
Associate Professor, Graduate Institute of Biomedical Electronics and Bioinformatics/ Department of Computer Science and Information Engineering/ Department of pharmacy, National Taiwan University

生物資訊與化學資訊實驗室
Bioinformatics and Cheminformatics 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臨床前藥物吸收、分佈、代謝及毒性之分析及新藥設計。2. 以化合物三維結構分析用在化學資料庫做虛擬藥物篩選與化學結構資訊比對。 3. 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.


IPE code symbol definitions
0 ALL all atoms in the molecule
1 NP nonpolar atoms
2 P+ polar atoms with positive charge
3 P− polar atoms with negative charge
4 HBA hydrogen bond acceptor atoms
5 HBD hydrogen bond donor atoms
6 ARO aromatic atoms
7 HS non-hydrogen atoms (hydrogen-suppressed)
Assign Interaction Pharmacophore Elements (IPE)
Molecular Dynamics Simulation Sampling
Average Distances Between Atoms
Main Distance-Dependent Matrices (MDDM) Between IPE Types
Positive Eigenvalues of MDDM x MDDM^T


(a) Match defined peaks: (1), (2), and (3)
(b) Segmentation
(c) Local alignment
(d) Combination of each chromatogram
intensity
4000
0
(start)
(1)
(2)
(3)
(end)
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0

主要研究領域 Major Research Areas

計算化學及計算毒理學、生物資訊學、化學資訊學、醫學資訊學
Computational Chemistry and Computational Toxicology, Cheminformatics, Bioinformatics, and Medical Informatics

研究計畫 Research Projects

1. 電腦輔助設計組蛋白甲基轉移酶G9a之抑制劑暨臨床前結構安全性篩選
   Computer-aided Drug Design and in silico Pre-Clinical PK/Safety Screening of Histone Methyltransferase G9a Inhibitors as the Target Cancer Therapies
2. 運動處方對國人重大疾病的健康效益－臨床與代謝體指標的探討
   Exercise prescription for current major diseases recovery with special emphasis on clinical indices and metabolomics biomarkers

計畫名稱： 電腦輔助設計組蛋白甲基轉移酶G9a之抑制劑暨臨床前結構安全性篩選
補助單位： 行政院國家科學委員會(生物處)

G9a是哺乳動物內與異常染色質有關的甲基轉移酶，可經由促進H3K9的甲基化抑制腫瘤抑制基因的表現，我們的整合研究團隊已顯示G9a的生物活性在腫瘤進展的過程中，涉及多種重要的細胞功能，包括癌細胞的增殖，黏附，遷移，侵襲，失巢凋亡以及癌症幹細胞維持。此外，抑制G9a的活性後，亦可有效降CD133+的結腸癌幹細胞自我更新的能力，而結腸癌幹細胞是在結腸癌治療過程中，導致癌症復發與抗藥性的主要原因之一。這些證據有力地支持，未來在台灣本土癌症患者的治療上，G9a是一個很好的標靶分子，同時目前只有一選擇性G9a抑製劑，發展有效的G9a抑制劑似乎可做為未來癌症藥物市場發展的策略。

本計劃目標在於透過電腦模擬和演算能力的方法研發新型G9a抑製劑，以結構優化分子結構使其具有更佳的生物活性，使其成為新型藥物應用於臨床治療。

我們將分析G9a與配體間的相互作用關係，根據目前篩選到的化合物以及現有的抑制劑合理地篩選共多可能之分子成引導型抑制劑。此方法中根據已知結構進行結構置換，同時保留原有相似的化學性質，以合成出新型有潛力的抑制劑。此外，在團隊合成資料庫中，篩選有潛力的抑制劑提供合作研究團隊進行細胞實驗，根據實驗值進一步分析以達到結構優化。

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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、中國醫大醫院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, Taipei Veterans General Hospital, and China Medical University 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

1. 多功能乳房超音波電腦輔助診斷系統3年計畫
   Multifunctional Breast Ultrasound Computer-aided Diagnosis
2. 乳房彩色彈性超音波之電腦輔助診斷
   Computer-aided Diagnosis System for Breast Color Elastography
3. 自動乳房超音波之電腦輔助診斷
   Computer-aided Diagnosis System for Automated Breast Ultrasound

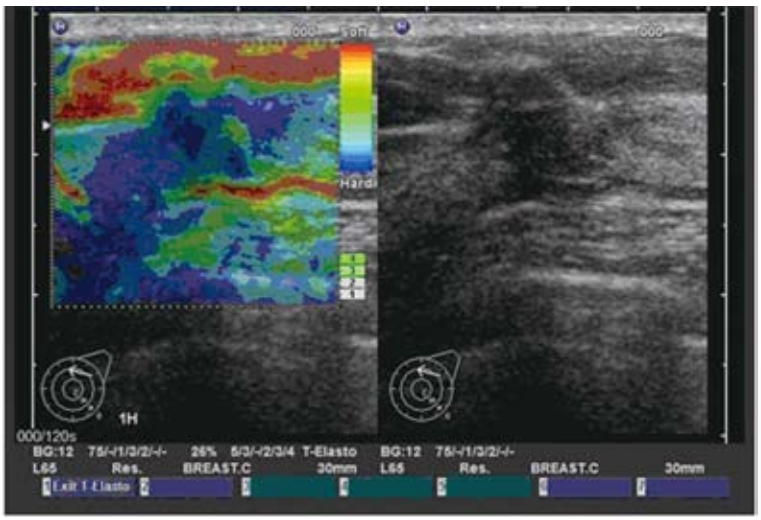
計畫名稱：乳房彩色彈性超音波之電腦輔助診斷
補助單位：行政院國家科學委員會
計畫期間：2009/08/01 – 2012/07/31

彈性超音波是繼彩色Doppler 超音波之後最重要的超音波新技術，彈性超音波影像是利用超音波探頭對組織輕微施加壓力，組織會因壓力的關係而產生位移，而組織的位移可利用比對鄰近的超音波射頻訊號的方式得知，再經由組織的位移即可評估組織的彈性。組織的彈性會因年齡、發炎、或有腫瘤存在而改變組織的彈性，一般而言，良性腫瘤會比較軟而惡性腫瘤會比較硬，因此利用施壓測量組織的彈性對於腫瘤的診斷已証明是不錯的診斷方法。早期的彈性影像是以灰階的形式呈現的，而彩色彈性超音波是將灰階的彈性影像轉成半透明、彩色的彈性影像疊在傳統B-mode影像上，如此更可增加彈性影像可讀性，更容易判斷腫瘤內、外組織的彈性特性。本計畫將針對彩色彈性超音波發展電腦輔助診斷系統，第一年將由彩色彈性超音波還原出彈性 資訊，再利用腫瘤部分的軟硬程度發展可靠的診斷特徵。第二年將同時利用彈性影像及傳統B-mode灰階影像來診斷腫瘤，除了將比較彈性診斷特徵及B-mode診斷特徵，也將結合二種特徵以提高診斷準確度。第三年將加入自動腫瘤切割以完成全自動的診斷系統，同時也將分析彩色彈性超音波連續動畫影像，以減少操作者不同壓力對診斷的影響。

Project title: Computer-aided Diagnosis System for Breast Color Elastography
Supported by: National Science Council
Project period: 2009/08/01 – 2012/07/31

The elastography is the most important development in ultrasound technology since the advent of Doppler imaging. The principal of elastography is that tissue compression produces strain within the tissue and that the strain is smaller in harder tissue than in softer tissue. Therefore, by measuring the tissue strain induced by compression, we can estimate tissue hardness, which may be useful in diagnosing breast cancer. In the color elastographic images, strain data are converted into a color scale imaging that is superimposed on B-mode imaging. Colors range from red, corresponding to soft tissue, to blue, the stiff one. In this project, color breast elastography is adopted to analyze breast tumor. In the first year, the original strain information will be recovered from the color elastography by computing the hue information. The strain information will be used in the proposed computer aided diagnosis system. In the second year, both elastography features and B-mode features are used to classify breast lesions in breast images. Moreover, these two types of features will be compared to check whether the strain information is more useful than B-mode information for diagnosis and whether the strain information could improve the diagnosis or not. In the third year, an automatic tumor segmentation method based on the fuzzy method will be developed in order to complete a fully automatic computer aided system for color breast elastography. Also, the continuous elastographic images will be analyzed to insure the reproducibly and reliability of the color elastography.

代表圖及中英文說明：



Color elastography
彩色彈性超音波

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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

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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

計畫名稱：行動式無線癲癇症預測雲端系統
補助單位：臺大醫院
計畫期間：2011/08/01 – 2012/07/31

在歐美癲癇症的患病率高達0.52%及0.68%，臺灣約有14萬人罹患不同程度的癲癇,而其中約15-30%的病患對藥物治療反應不佳，而癲癇症發作時病人往往失去知覺，因此若能有效預測並及時施予救治,即能有效預防癲癇症解救危機,然而癲癇症發作的時間地點經常無法預測，因此行動癲癇症預警系統有相當的重要性。近年來迷走神經刺激法(VNS, Vagus nerve stimulation therapy) 已成功的發展及運用,且目前已有3萬人使用,但正確精準的時機去啓動VNS還是一項重要的課題。

我們第一年目標將建立Multi-channel的行動癲癇症預警系統，第二年將著手建立植入性電極系統發展並且驗證大量臺大臨床資料。而腦電圖為監控癲癇症之發作以及癲癇預測最重要的指標。一般神經內科醫師判斷癲癇症發作的條件為；一、突然出現和背景腦電波不一致的腦電波組合。二、腦電波的頻率劇烈轉變成特定模式。三、在平時的腦電波中出現了癲癇樣棘波。四、腦波的異常能量上升。五、上述之棘波重複出現的腦波由單一頻道擴散到鄰近的頻道中。

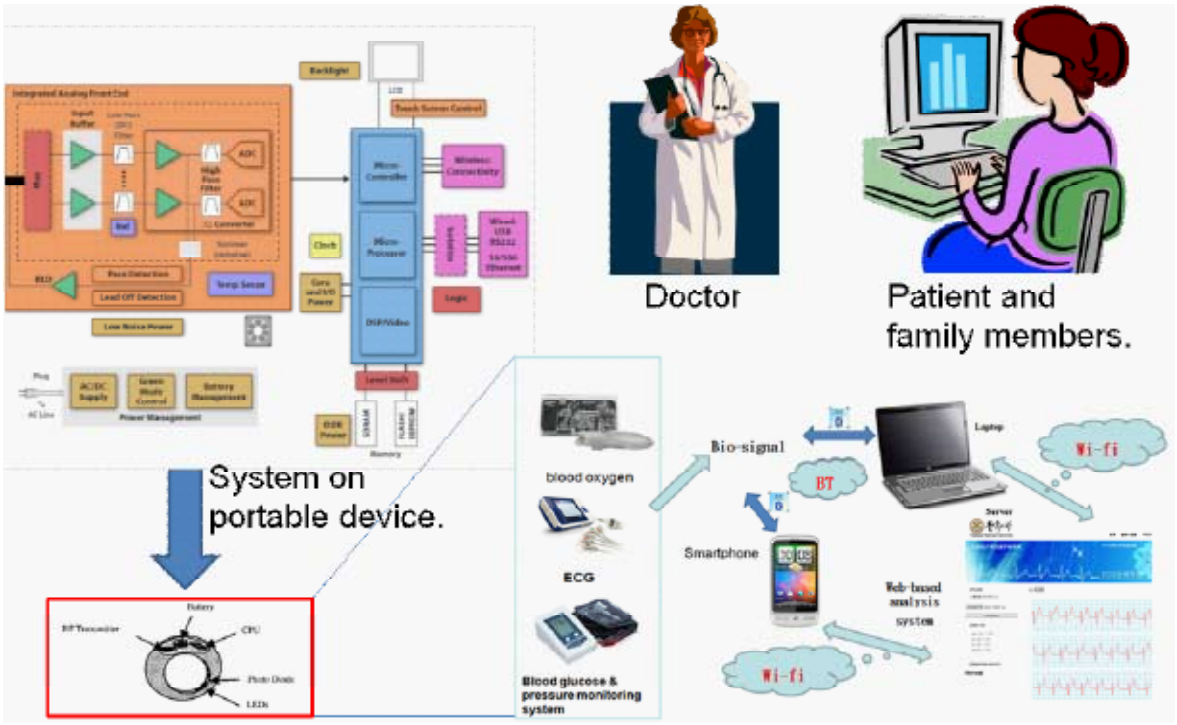
利用上述判斷資法則及運用我們新開發的EEG 判讀科技，我們將延續與臺大神經內科邱銘章醫師合作開發偵測癲癇症的系統。利用Portable EEG Instrument 與Android手機結合,將腦波機所量出來的腦波無線傳輸至手機，再利用本團隊所研發的演算法，快速做到Alarm的效果，以防止病人癲癇發作並即時傳至雲端主機分析，即時醫治,並降低醫療成本。若開發成功，預計將成為下一步VNS整合系統之基礎架構。

Project title: Mobile Wireless Epilepsy Seizure Prediction System with Cloud Computation Method
Supported by: NTUH
Project period: 2011/08/01 – 2012/07/31

Jui-Hsiang Liu , Kuan-Lu Huang , Tsung-Yu Li , Meng-Chun Chiu , Charlie Chung-Ping Chen ,Chih-Sheng Jao , Lon Wang

計畫名稱：連續性個人化健康照護整合平台子計畫三
執行單位：國立臺灣大學生醫電子與資訊學研究所
計畫期間：2011/06/01 – 2012/06/30

目的為無縫式個人健康記錄之行動裝置提供，針對無線傳輸之生理量測儀器與智慧型手機應用，以行動個案為對象，於家中透過生理監測儀器量測數值後，經由ZigBee無線傳輸，上傳至個人化健康照護整合平台。透過智慧型手機的輔助，可達到不受時間、地點限制，均可透過手機上網存取個人健康記錄、自我管理、甚至於看診時提供醫師參考，同時透過低功耗的藍牙傳輸技術，將無線感應生理訊號量測儀器傳輸至智慧型手機，透過智慧型手機的方便性與方便攜帶性，使得資料的分析與閱讀可即時進行。



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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 (room706)。負責人為陳志宏(Jyh-Horng Chen)教授，助理一人，研究生六人，博士班學生一人。主要研究方向為核磁共振造影(MRI)、殘障者人機介面與噪音抑制(Noise cancelation)等研究主題。在電機一館一樓設有MRI/MRS實驗室，設有一台Bruker 3.0 Tesla MR，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。

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。

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

生醫分子影像核心實驗室
Biomedical Molecular Imaging Core Lab.

此核心實驗室結合磁共振(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 ability to synthesize high affinity molecular probe and specific-targeting contrast agent, and then in vivo specific molecular imaging will be obtained.

Our primary aim for this Biomedical molecular imaging Core is to provide research services to all the investigators within NTU medical campus, and conducting methodological research related to biomedical molecular imaging is our secondary aim. On other hand, we also develop the novel contrast agents which have specific targeting function for disease 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. 心智科學大型研究設備建置及共同使用服務計畫—大腦與心智文化整合性研究
   Installation and Operation of Core Facility in Mind Science: An Initiative for Integrated Research on Brain, Mind and Culture
2. 供癌細胞/幹細胞血統追蹤之基因改造鼠：研發及應用--具標定功能奈米顯影劑及複合式生醫分子影像技術平台之研究：以雙螢光基因及白喉毒素受體基因替換小鼠為模型（子計畫二）
   Genetically-Gngineered Mice for Cancer Cell / Stem Cell Lineage Tracing : Research and Application
3. 發展動態磁振造影及具標定之生醫分子影像：評估肺癌與轉移肺癌小鼠模式之治療反應－發展動態磁振造影

及具標定之生醫分子影像：評估肺癌與轉移肺癌小鼠模式之治療反應
Evaluating Therapeutic Response of Lung Cancer and Metastatic Lung Cancer in Mouse Models with DCE MRI and Targeted Molecular Imaging

4. 大腦如何調節自發性節律平靜狀態下腦功能性連結之探討與應用
How Does Brain Coordinate Spontaneous Fluctuation?
5. 影像導向神經幹細胞之應用於中風及週邊神經創傷－神經幹細胞之非侵入式磁振影像追蹤（子計畫三）
6. 基因體醫學研究中心
Program for Excellence Research Teams：NTU Center for Genomic Medicine -Biomedical Molecular Imaging Core Lab

計畫名稱：心智科學大型研究設備建置及共同使用服務計畫—大腦與心智文化整合性研究
Installation and Operation of Core Facility in Mind Science: An Initiative for Integrated Research on Brain, Mind and Culture
補助單位：行政院國家科學委員會
計畫期間：2010/08/01-2013/07/31

MRI及MEG作為研究工具是一重要趨勢，但目前人文社會科學學者使用此兩項儀器從事研究者並不多。國科會人文處既已投注經費建置，帶動研究者來使用，是執行機構的責任，因此人才培訓的工作就很重要。要如何讓潛在人才浮現、如何讓人文社會科學各領域（如社會行為、經濟行為、道德行為、藝術、精神醫學、法律、教育等等）研究已經做得不錯的學者能嘗試使用這些設備來提升其研究，則未見有詳細規劃。

計畫名稱：發展動態磁振造影及具標定之生醫分子影像：評估肺癌與轉移肺癌小鼠模式之治療反應－發展動態磁振造影及具標定之生醫分子影像：評估肺癌與轉移肺癌小鼠模式之治療反應
Evaluating Therapeutic Response of Lung Cancer and Metastatic Lung Cancer in Mouse Models with DCE MRI and Targeted Molecular Imaging

補助單位：行政院國家科學委員會

計畫期間：2009/08/01~2012/07/31

本研究計畫將利用兩種肺癌轉移的動物模式作為研究標的：其一為受放射線治療誘發肺癌轉移的動物模式(C57BL/6品系)，其腫瘤細胞為Lewis lung carcinoma(LLC-LM)；其二為SCID之動物模式，其腫瘤細胞為CL1-0、CL1-5、與Mock 189來探討腫瘤轉移形成機轉。在針對細胞分子表現特異性鑑別之奈米顯影劑的發展平台部份，可藉由測試修改奈米表面以改良並同時具有正子斷層掃瞄與磁振造影之對比顯影的效果。藉由發展新型態之奈米粒子作為吸收近紅外光誘發熱治療之雙效奈米藥物。根據過去的文獻報導，為新生血管之表面受器，其可被RGD-4C特異標定其腫瘤新生血管。而同時EFGR(Epidermal growth factor receptor)為一腫瘤生長激素表面受器，其功能可被抗EGFR抗體抑制，因此未來將進一步連結抗腫瘤及新生血管特異性表面抗原分子，如EGFR及RGD-4C，以作為融合標的投遞之導向器及攻擊武器於一體之多功製劑。

在磁振造影之分子影像擷取部份，此計畫將整合跨領域的磁振造影技術，包括擴散磁振造影、微灌流磁振造影、顯微磁振造影以建立一個宏觀且領先的磁振分子影像造影技術。此外，本團隊將發展出高效率改良式的高速成像序列及高溫超導射頻線圈造影技術並使用具有強梯度磁場的顯微造影線圈及平行影像技術及其重建演算法，藉以大幅提升影像敏感度、解析度、訊雜比、及取像速度。為了適用於活體動物實驗，本計畫將結合上述改良造影技術於3T (Tesla)以及7T 磁振造影系統並結合動物正子斷層掃瞄以建立小鼠實驗影像技術整合平台。有了此一最佳化之小動物平台，將有助於研究奈米顆粒顯影劑的對比特性、建立適合於磁振照影對比強化的肺癌動物模型之造影平台、並評估動態顯影之核磁共振照影技術與合成之奈米顆粒顯影劑之體內生物分佈及標記之功效。

本研究整合一流之生醫及理工研究團隊以從事動態顯影、奈米顯影粒子、顯微磁振造影、及動物正子斷層掃瞄等結合上中下游之整合研究建立活體動態追蹤動物腫瘤治療評估及轉移過程的分子影像模式，分析放射線引發肺癌肺臟轉移過程中血管新生與缺氧誘發因子的動態表現情況，以釐清血管新生與缺氧誘發因子對應其標靶藥物在抑制小鼠腫瘤肺部轉移治療之應用潛力，以期密切的交流互動及研究成果達成預期研究目標，提升在國際上的能見度，達到生醫分子磁振造影技術之領先地位。

計畫名稱：供癌細胞/幹細胞血統追蹤之基因改造鼠：研發及應用--具標定功能奈米顯影劑及複合式生醫分子影像技術平台之研究：以雙螢光基因及白喉毒素受體基因替換小鼠為模型(子計畫二)
Genetically-Gngineered Mice for Cancer Cell / Stem Cell Lineage Tracing : Research and Application
補助單位：行政院國家科學委員會
計畫期間：2009/08/01~2012/07/31

本研究計畫是整合光學及磁振造影之生醫分子影像技術平台針對基因剔除/嵌入之動物模型進行細胞與生物體內之組織特異幹細胞 (tissue specific stem cells)與腫瘤幹細胞 (cancer stem cells) 的影像追蹤，以瞭解細胞分化與腫瘤生成的過程。此外並發展具白喉毒素受體標定之奈米顯影劑以增進磁振造影之靈敏度與偵測極限。此外，藉由微光學內視鏡系統與動物磁振造影平台的整合，達到磁振造影導引光學探針之技術發展。

本研究重要的議題，可分成兩項：其一藉由本研究計畫的執行，可發展肝臟再生動物模式之醫學影像偵測平台，並對於肝癌化之動物模式及肝臟前驅細胞進行活體內之動態影像觀測，利用生醫分子影像系統與組織切片之比對，瞭解肝臟再生、肝癌化過程、及肝臟前驅細胞之基因調控的研究；其二針對腦部發育及幹細胞分化的過程結合Diffusion Tensor MRI與功能性磁振造影技術平台，瞭解神經幹細胞之分化、發育、遷徙的過程。

計畫名稱：大腦如何調節自發性節律 平靜狀態下腦功能性連結之探討與應用
How Does Brain Coordinate Spontaneous Fluctuation?
補助單位：行政院國家科學委員會
計畫期間：2008/12/01~2011/11/31

本計畫的最後一個目標是建構一個屬於臺灣華人之大腦功能連結資料庫系統，這個資料庫包含一般無心理疾病病史之普通人與精神分裂症患者。藉由先前所指出之欲發展架構之技術與敝實驗室早先開發之臺灣華人大腦結構影像圖譜，我們將可以針對更細微的功能與結構變化相比對，以其在大腦功能連結上得到更具意義之發現。同時，在不同階段的發展情況下之大腦功能連結資訊，對於人類大腦功能發展是如何由混沌到井然有序的過程，將會有莫大之助益。因此，對於發展一個可用於臨床診斷上的標準模板，發展與建構第一個臺灣華人之資料庫將扮演一個關鍵之角色。

總括來說，發展與建構上述所言之技術，將對大腦科學研究有莫大助益。第一，對於平靜態大腦功能性連結將有更進一步的生理意義之探討。第二，發展與建構大腦功能連結之取像與分析技術。第三，建構臺灣華人之資料庫系統中心，提供臨床診斷與大腦科學研究之標準與參考依歸。這份研究將會把平靜態大腦功能連結技術發展為新世代的診斷工具，並且擴展其應用層面，增進我國大腦科學研究於國際上之競爭力。

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智慧型及精密運動控制實驗室
IPMC Lab.

本實驗室「智慧型精密運動控制實驗室」由陳永耀教授領導，位於明達館604室，其研究的主要方向為智慧型控制與超音波熱療。實驗室的近期研究領域分成反向光學微影技術、電子束微影系統、姿態辨識聲音的分析與處理、仿生機械人、及超音波熱療等五大主題。

反向光學微影技術的研究是針對在IC製程上小尺度的光罩所產生的繞射現象，在光罩設計時將繞射現象考慮進去，設計出最佳的光罩形狀。電子束微影系統的研究是在IC製程中的電子束蝕刻時，對電子束做位置的訊號回授控制以修正電子移動時所產生的漂移現象。姿態辨識的研究是利用人工智慧的方式來處理影像中的資訊，本實驗室建立影像的監視系統應用在老人看護上。另外在聲音處理的方面是利用訊號處理的方式將聲音中的雜訊濾除，進而研究聲音本質與語者分析。仿生機械人的研究是模仿生物的運動模式，將生物的優點轉換成電機領域的應用，近期的研究是將蛇的運動設計成新型的載具。超音波熱療的研究是發展新的預測方式，來追蹤人體中因呼吸而上下運動的腫瘤細胞，使得聚焦的超音波能夠正確的加熱在腫瘤細胞上，殺死腫瘤細胞。

本實驗室致力於將智慧型控制嘗試應用在各方領域，將機械自動化，改良儀器控制法，改善人類生活。

Intelligent Precision Motion Control Laboratory is lead by Prof. Yung-Yaw Chan and located in room 604, Minda building. Researches included inverse optical micro-lithography, electron beam lithography, motion identification, sound Analysis, biomimetics, and high intensity focus ultrasound.

Inverse optical micro-lithography is to design the optimal from of the mask, due to the diffraction of light changes. Electron Beam Lithography is to write on wafers by electron beam directly. We use sensors to feedback control the system to reduce beam broadening and proximity effect. In motion identify, we analyze the human activities for the home care systems. Biomimetics is to study the biological structure and the locomotion of real snakes, and to develop and design advanced platform actuation systems. Our laboratory applies Intelligent Control to automate machine and to improve the system performance.

主要研究領域 Major Research Areas

智慧型控制、居家看護、精密伺服控制、超音波加熱治療

Intelligent control, Home care, Precision servo control, Hyperthermia treatment planning

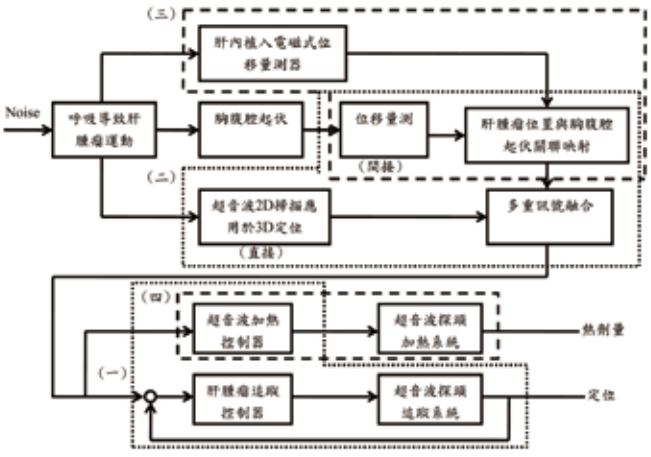
研究計畫 Research Projects

1. 由呼吸導致週期性位移肝腫瘤之超音波熱劑量控制方法研發(總計畫)
   Development on High Intensity Focused Ultrasound Thermal Therapy Tracking Control on Liver Tumor with Respiration-induced Periodic Motion
2. 肝腫瘤位置追蹤及高強度聚焦超音波熱療控制系統研發(子計一)
   Development on Liver Tumor Tracking and High Intensity Focused Ultrasound Thermal Therapy Control System
3. 以影像為基礎之多目標智慧型動作辨識
   Vision-based Multi-target Intelligent Human Motion Identification
4. 智慧型居家看護影像監控系統 (II)
   Intelligent video surveillance on home care system(II)
5. 應用於熱手術與熱治療之高強度聚焦超音波患能器開發(I)
   Effects of HIFU cavitation and nonlinearity on the thermal lesion formation and its applications for thermal therapy
6. 蛇形仿生運動機制及前瞻載具驅動系統之研究-總計畫：蛇形仿生運動機制及前瞻載具驅動系統之研究
   Biomimetic snake locomotion and its application to advanced platform actuation systems—master plan
7. 蛇形仿生運動機制及前瞻載具驅動系統研究-子計畫四：蛇形運動控制方法及前瞻載具驅動器設計
   Biomimetic snake locomotion and its application to advanced platform actuation systems—sub plan
8. 智慧型居家看護影像監控系統(III)
   Intelligent video surveillance on home care system(III)

9. 座艙聲紋分析系統之研發
   Development of voiceprint analytical systems for cockpit voice recorders
10. 高強度聚焦超音波穴蝕化與非線性對熱治療區形成之影響及其在熱治療應用之研究(II)
    Investigation of high intensity focused ultrasound for moving tumor thermal therapy
11. 高強度聚焦超音波應用於運動中腫瘤之熱治療探討
    The beating effect of confocal ultrasound on the thermal lesion formation
12. 共焦聚集超音波熱治療時聲拍作用對熱燒灼區形成之影響
    Development of HIFU transducer for thermal therapy and surgery
13. 以影像為基礎之智慧型動作辨識
    Vision-based Multi-target Intelligent Human Motion Identification

計畫名稱：由呼吸導致週期性位移肝腫瘤之超音波熱劑量控制方法研發（總計畫）
補助單位：行政院國家科學委員會
計畫期間：2009/08/01-2011/07/31

惡性腫瘤高居臺灣十大死因之首，而有效的治療方式中，超音波加熱治療較外科手術切除、放射線療法、栓塞法與化學療法等方法有更低的副作用及非侵入性，而為極有潛力之腫瘤治療方法。以高強度聚焦超音波進行治療時，必須準確地聚焦在所要治療的患部，以避免在正常的組織形成過多的熱劑量分布。動態腫瘤如肺癌、肝癌，由於呼吸及橫膈膜的影響產生週期性的往復運動。為了能夠準確的定位運動中的肝腫瘤，並施以適當的加熱治療，本計畫將依量測、控制、探頭、及生理等多領域進行研究。在子計畫二主要研究的量測方面，將分為間接量測與直接量測。由於肝臟位於人體腹腔內，現有之掃描技術雖然可以取得非常精細之圖像，但速度遠低於即時控制所需。因此計畫將同時推動以量測胸腹腔起伏關聯至肝臟運動之間接量測方法與分析，進行多重感測訊號融合，以及以二維超音波掃描轉換為三維定位資訊之量測技術。在子計畫三之生理實驗相關研究上，將以活體實驗方式量測肝臟位置，以進行間接量測之關聯性分析，同時多方面探討各項生理參數與限制條件對肝臟位置關聯性之影響。此外子計畫三最後將進行超音波熱療之活體實驗，確認計畫執行成效。在子計畫四主要研究之探頭設計方面，將發展順型(conforming)加熱之探頭設計，以期能夠在最短時間內達成有效之加熱療效，並阻抗控制觀念下進行探頭理論之開發。子計畫一之主要任務在完成高強度超音波熱療之肝腫瘤追蹤控制系統設計與建構，除了系統整合與協調各子計畫研究工作進行外，預計探討即時之智慧型重複控制方法(Intelligent Repetitive Control)，以及以較慢之三維定位資訊進行即時控制系統之週期性校正。



圖一 子計畫關聯性之控制方塊圖

整體而言，本計畫結合國立臺灣大學電機／生醫電資、機械、醫學各系所之傑出研究團隊，研發因呼吸導致週期性運動之肝腫瘤高強度聚焦超音波追蹤控制熱療系統，有效整合各領域專長，提升國內醫療設備開發能力，並將以活體實驗確實驗證計畫成果。

關鍵詞: 高強度聚焦超音波、肝腫瘤治療、追蹤控制、順型探頭、系統整合、感測訊號融合

Project Title: Development on High Intensity Focused Ultrasound Thermal Therapy Tracking Control on Liver Tumor with Respiration-induced Periodic Motion

Supported by: National Science Council

Project Period: 2009/08/01-2012/07/31

Cancer has been the top cause of death for people in Taiwan for many years. Among its possible treatments, such as surgery, radiation, blocking, and chemical therapies, the High Intensity Focused Ultrasound (HIFU) thermal therapy is regarded as one with great potential due to its low side-effect and noninvasiveness. With HIFU, the target area has to be quite accurate to avoid the possible damage of normal tissues from the excessive thermal distributions. Some of the tumors, such as liver or lung cancers, will have periodic motions from the respirations. Our project is focused on the sensing, heating, in vitro experiment, control and system integration so that an effective thermal therapy methodology can be achieved. In project II, indirect sensing of liver motion through the chest and abdomen motion will be conducted and studied. Also from the fact that current imaging technology is not fast enough for real-time control, a technology by utilizing the 2D ultrasound images and transform to the 3D liver position will be developed. Project III will conduct in vitro experiments for liver motion data acquisition and analysis. And will also investigate the relationship between possible factors with the liver tumor position. At the final stage, project III will conduct an in vitro experiment with integration of the sensing, heating, and control of all the other projects for verifications. Project IV will study the conforming transducer design with the concept of impedance control and optimal heating strategies. Finally, project I will be mainly on the tracking control system design. Intelligent repetitive control will be studied to combine the repetitive control theory and the neural networks to form a real-time control system with periodic updating mechanism. Project I will also be responsible for system integrations.

Overall, an excellent research team is integrated with members from the NTU EE/BMEI, ME, and Medical departments to make joint efforts on this project. This project is expected to have excellent results academically and promote the domestic research capability of medical therapy equipments.

Keywords: High Intensity Focused Ultrasound,
liver tumor treatment, tracking control,
conforming transducer, system integration,
multi-sensor fusion.

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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

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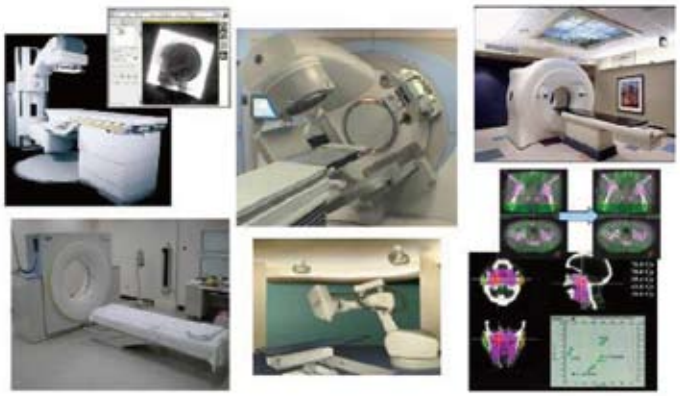
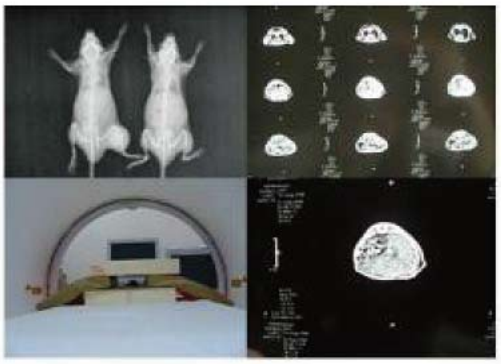
Attending Physician, Division of Radiation Oncology, Department of Oncology, National Taiwan University Hospital

放射物理生物實驗室
Radiation Physics and Biology Lab.

本實驗室由成佳憲副教授於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. 肝臟放射治療激發之介白素6 於肝癌控制與副作用預防的功能與機轉研究
   The functional and mechanism study of interleukin-6 from liver radiotherapy for therapeutic intervention on hepatocellular carcinoma control and side effect prevention
2. 探討組織蛋白去乙醯基酵素在肝癌放射治療的角色
   Investigation on Therapeutic Role of Histone Deacetylase in Radiotherapy to Hepatocellular Carcinoma

計畫名稱：肝臟放射治療激發之介白素6 於肝癌控制與副作用預防的功能與機轉研究

補助單位：行政院國家科學委員會

計畫期間：2010/08/01 ~ 2013/07/31

近年來由於放射治療技術與物理劑量學上的進展，放射線治療逐漸成為肝癌病患或其他部位腫瘤轉移到肝臟的治療方法之一。臨床上的研究顯示，血清中的介白素六會在肝臟接受放射線治療的療程中上升，然而介白素六的上升原因及其在肝臟放射線治療的生物意義目前仍不清楚。介白素六是具有多種效應的因子，在先前的研究中已經被發現介白素六剔除會使得小鼠的肝臟修復功能大幅下降，也有研究則顯示介白素六對肝癌細胞具有抗凋亡的效用。另一方面以介白素六及其相關訊息傳遞途徑為標的的標靶藥物也推陳出新，由於標靶藥物與放射線治療併用在腫瘤轉譯醫學的發展，使我們認為釐清介白素六在肝臟或肝腫瘤放射線治療的角色，確實是臨床上攸關肝臟受放射線照射後安全與治療效果的重要課題。

過去幾年，我們已經發表建立了小鼠肝臟部位及肝臟腫瘤的放射線治療平台，並以人類B型病毒基因轉殖小鼠探討放射腺誘發病毒複製與介白素六的相關性，以及血管內皮細胞受放射線照射產生介白素六的機轉，確認小鼠的肝臟放射線治療會如同在人類血清中觀察到的介白素六的上升，先期研究並已建立以Tetracycline 啓動基因轉殖小鼠介白素六活化的實驗動物。因此在本研究中，我們主要將運用已經建立的照射平台以免疫完整的小鼠探討介白素六在放射線治療中對正常肝組織的生理與病理效應，以及介白素六對肝腫瘤的治療作用影響。

三年期計畫中的分年目標與研究步驟分別為：第一年釐清放射線治療活體情況下介白素六對正常肝組織與肝腫瘤的效應。主要的研究策略為使用小鼠活體肝臟放射線治療模式配合自體介白素六狀態，誘發介白素六過度表現，及抑制介白素六等狀態，區分介白素六對正常肝臟組織與肝腫瘤的病理效應，與B型病毒基因轉殖小鼠之病毒活化程度影響，並以細胞凋亡、增生，及細胞週期之相關蛋白為定量定性指標。第二年的研究目標為利用體外細胞模式探討介白素六的產生來源細胞，及其對不同肝臟組成細胞在放射線照射情況下的作用機轉。主要的研究策略為分離各種肝臟組成細胞並以分子生物及化學抑制劑阻斷方法釐清介白素六對不同肝臟組成細胞在放射線照射情況下的角色。第三年的研究目標為建立追蹤介白素六表現的方法，並探討以前二年研究結果的介白素六及其相關途徑，介入為治療標的的方法，測試其在肝臟放射治療應用之可行性，主要的研究策略為以介白素六promoter連接冷光訊號的基因轉殖鼠，建立可偵測介白素六活化的分子影像模式。嘗試介白素六抗體及其受體抑制劑、下游訊息阻斷劑與放射治療併用，定性定量正常肝組織損傷與肝腫瘤控制情況的差別，以評估這些方式應用於肝臟放射治療之可能性。

預期本三年期計畫能提供肝臟放射線治療後產生介白素六的來源，功能，與機轉，如可適切的開發新的分子標靶藥物進行併用，將對肝癌放射治療具重大意義，也將對肝臟放射生物的基礎研究會是突破的關鍵。

Project title: The functional and mechanism study of interleukin-6 from liver radiotherapy for therapeutic intervention on hepatocellular carcinoma control and side effect prevention

Supported by: National Science Council
Project period: 2010/08/01 ~ 2013/07/31

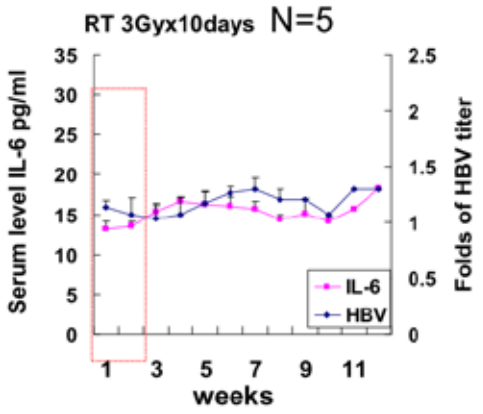
With the improved radiotherapy (RT) technology, medical physics, and dosimetry, RT has become one of the treatment options for patients with localized hepatoccellular arcimoma (HCC) or liver metastasis. Clinical studies have shown that serum interleukin-6 (IL-6) level is elevated during the hepatic RT. However, the mechanism and the effect of this elevated IL-6 are not clear. IL-6 is a multi-functional factor. The regenerative function of liver is lost in the IL-6 knockout mice. Meanwhile, IL-6 is also found to enhance the anti-apoptotic effect on HCC cells. Nowadays, many molecular targeting drugs on IL-6 or on the downstream signaling pathways have been developed. Furthermore, the combination of molecular targeting drugs and RT is evolving in the translational research. We think it necessary to clarify the role of IL-6 in liver radiotherapy. It would be an important issue for not only the safety of liver RT but also the therapeutic effect on HCC.

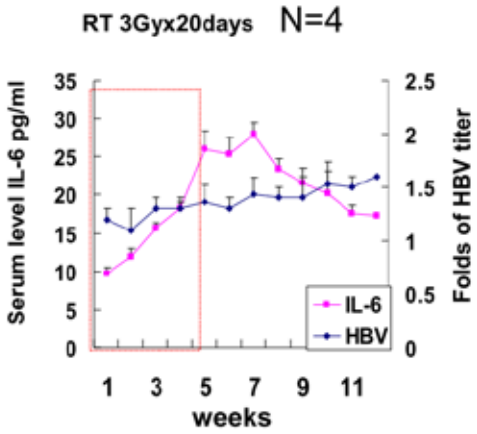
Our laboratory has established the platform for normal liver or orthotopic liver tumor RT on the mouse model. We published the data of defining the role of IL-6 on hepatitis B virus (HBV) reactivation in HBV transgenic mice, as well as the molecular mechanism and function of RT induced IL-6 in endothelial cells. We also demonstrated the elevated serum IL-6 level during the liver RT in mice, which is similarly found in human study. To prepare this project, we have established a transgenic mouse model with IL-6 activation by tetracycline. We plan to evaluate the physiological and pathological effect of IL-6 on normal liver, and the therapeutic impact of IL-6 on HCC by use of the established systems.

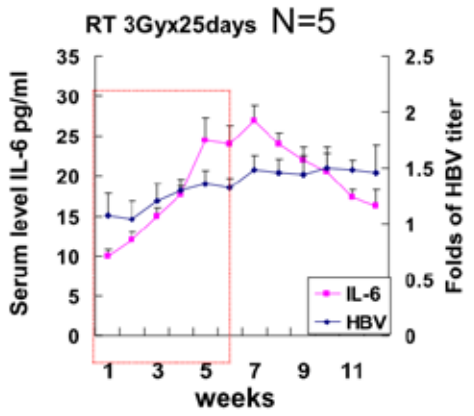
In the first year, we will focus on the effect of IL-6 on normal liver tissue and HCC treated with RT in vivo. The steps are to combine the liver RT with different types of mice, with native IL-6, IL-6 over-expression, and IL-6 inhibition. The effect is investigated by the pathological features and the molecular mechanisms of cell apoptosis, proliferation, cell cycle, and HBV reactivation. In the second year, we will in vitro define the source and function of IL-6 on different cells in liver and HCC cells. The step is to intervene the signaling pathways of IL-6 by molecular ways and chemical inhibitors with the isolated parenchymal and non-parenchymal cells. In the third year, we will establish the molecular image for the expression of IL-6, and study the therapeutic strategy of combining RT with IL-6 related targeting drugs based on the first two-year data. A transgenic mouse with the IL-6 promoter driven luciferase gene will be developed.

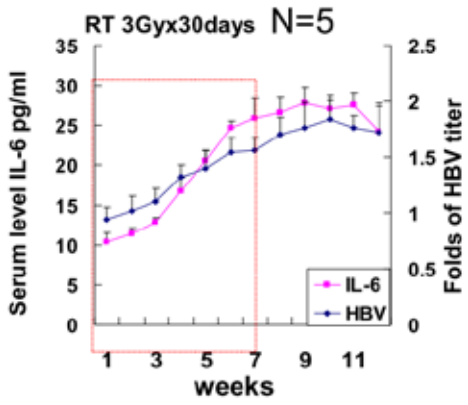
We expect these results may discover the source, mechanism, and function of IL-6 in liver RT, and be essential for liver radiobiology. They may also help appropriately combine IL-6 related targeting drugs with RT to HCC.

代表圖及中英文說明：









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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.

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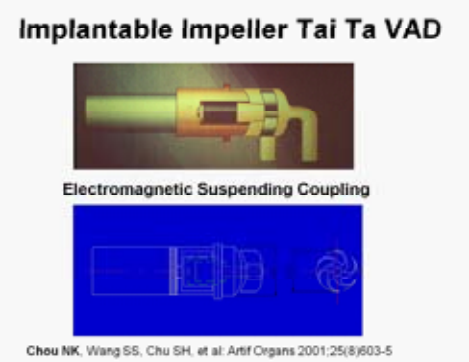
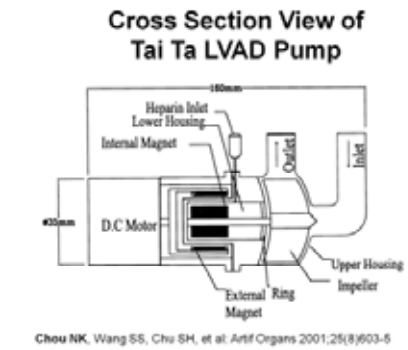
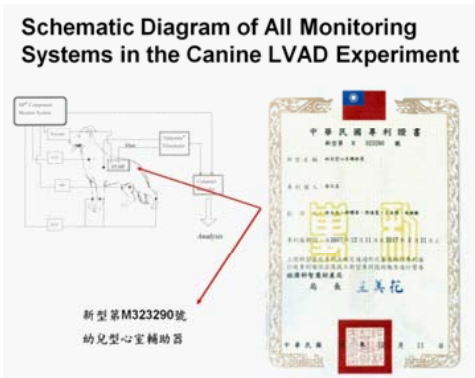

Implantable Impeller Tai Ta VAD
Electromagnetic Suspending Coupling
Chou NK, Wang SS, Chu SH, et al: Artif Organs 2001;25(8)603-5

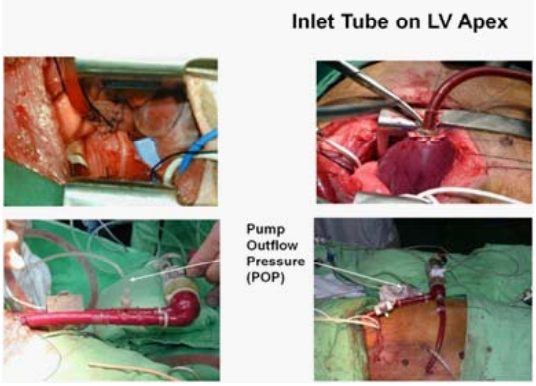

Tai Ta VAD
Aorta
LA
Chou NK, Wang SS, Chu SH, et al: Artif Organs 2001;25(8)603-5


Cross Section View of
Tai Ta LVAD Pump
Heparin Inlet
Lower Housing
Internal Magnet
Outlet
Inlet
D.C Motor
Upper Housing
Impeller
External Ring
Magnet
Chou NK, Wang SS, Chu SH, et al: Artif Organs 2001;25(8)603-5


Tai Ta LVAD
Chou NK, Wang SS, Chu SH, et al: Artif Organs 2001;25(8)603-5


Tai Ta LVAD Performance
Enhancement
Pro-Engineering Drafting Design
(CNC Manufacture)
Effects of Size and Geometry


Schematic Diagram of All Monitoring
Systems in the Canine LVAD Experiment
新型第M323290號
幼兒型心室輔助器


Inlet Tube on LV Apex
Pump
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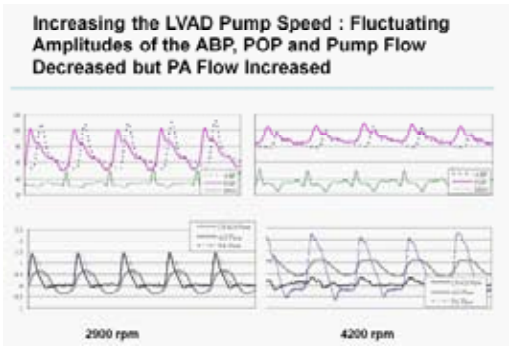


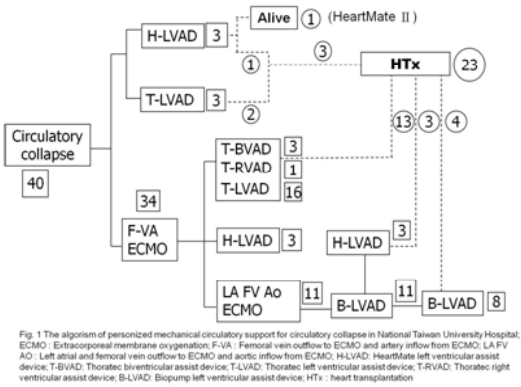
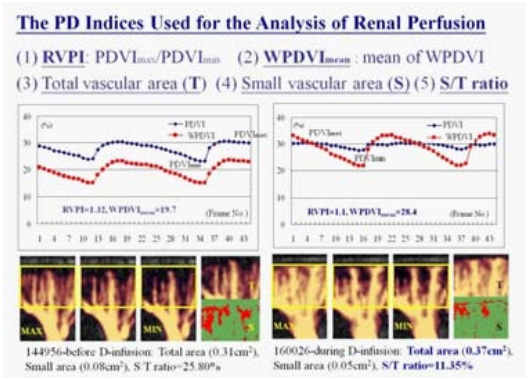
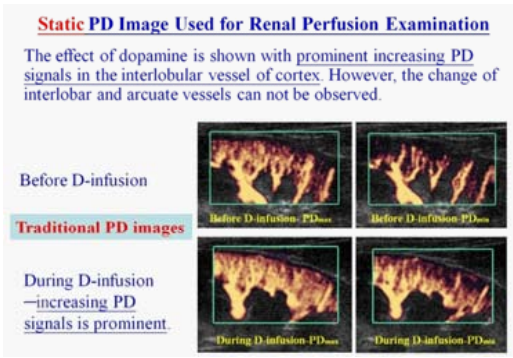
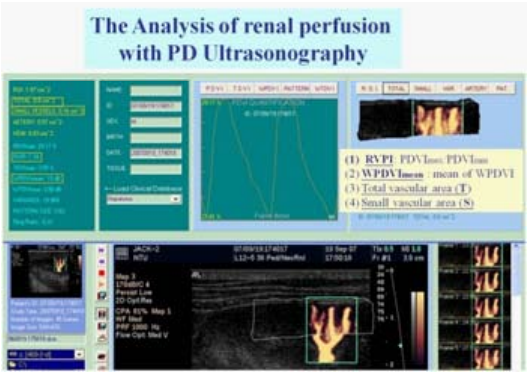
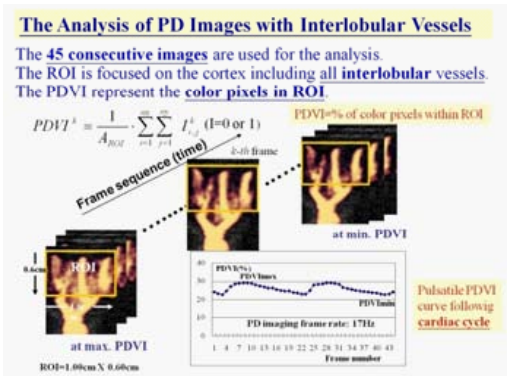


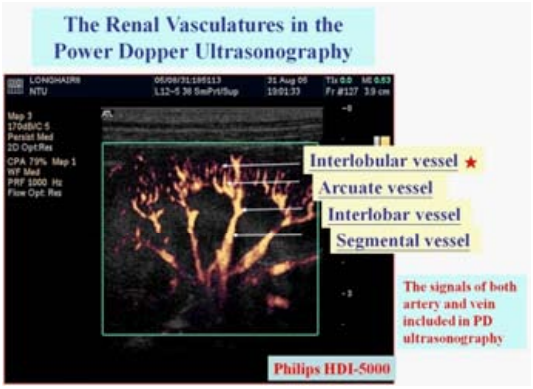
Fig. 1 The algorism of personized mechanical circulatory support for circulatory collapse in National Taiwan University Hospital; ECMO : Extracorporeal membrane oxygenation; F-VA : Femoral vein outflow to ECMO and artery inflow from ECMO; LA FV AO : Left atrial and femoral vein outflow to ECMO and aortic inflow from ECMO; H-LVAD: HeartMate left ventricular assist device; T-BVAD: Thoratec biventricular assist device; T-LVAD: Thoratec left ventricular assist device; T-RVAD: Thoratec right ventricular assist device; B-LVAD: Biopump left ventricular assist device; HTx : heart transplantation











傅楸善 教授 *Chiou-Shann Fuh* Professor

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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、致伸科技、太欣半導體、創惟科技、由田新技、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, Primax Electronics, Genesys Logic, Syntek Semiconductor, Utechzone, and TRI. Integrating multi-disciplinary research efforts, exploring advanced digital camera with biomedical applications, and automatic optical inspection is 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. 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
2. 數位相機之影像處理：色彩內插、色彩校正、色彩管理
   Digital Image Processing for Camera: Color Interpolation, Color Calibration, Color Management
3. 行動視訊高畫質顯示調適技術
   High Quality Display Adaptation Technique for Mobile Video Device
4. 視訊會議使用的相機陣列
   Camera Array for Video Conferencing

計畫名稱：數位相機之影像處理：降低雜訊、光線補償、臉色改善
補助單位：行政院國家科學委員會
計畫期間：2009/08/01-2012/07/31

本計畫為期三年、目的是研究利用電腦視覺與數位影像處理方法，進行數位相機降低雜訊(Noise Reduction)、光線補償(Light Compensation)、臉色改善(Facial Color Enhancement)之研究。在計畫執行期間，我們將探討最佳的攝影機、光源、環境、景物及色彩的互動，第一年研究適合不同感應器(Sensor)與影像訊號處理器(ISP: Image Signal Processor)的最佳降低雜訊方法；第二年研究最適合的光線補償演算法使拍出來的影像不管是在太暗或太亮的場景下都能得到對比很清楚，層次很分明的影像；第三年研究各種臉部瑕疵及顏色的改善方法，不管是雀斑、青春痘、膚色暗沈等，改善數位相機擷取的原始影像，使得每張影像都精采，每個主角都漂亮且滿意。並突破日本及美國在這三方面的專利及技術障礙，提高我國的數位靜態相機，相機模組及視訊攝影機在國際市場的競爭力。

Project title: Image Processing for Digital Cameras: Noise Reduction, Light Compensation, Facial Color Enhancement
Supported by: National Science Council
Project period: 2009/08/01-2012/07/31

This is a three-year project to use computer vision and digital image processing methods for noise reduction, light compensation, and facial color enhancement of digital cameras. We will study the best camera, light source, environment, scene, and color interaction. In the first year, we will develop various noise rduction methods for different sensors and image and signal processors (ISPs) to achieve optimum noise reduction. In the second year, we

will research the best light compensation algorithm to achieve images with good contrast and shading even under too bright or dark scenes. In the third year, we will research various facial defect and color enhancement methods to develop programs and algorithms so that freckles, acnes, skin darkness, and incorrect color and be enhanced and eliminated from digital camera raw image and achieve beautiful subject faces and satisfactory images for each shot. We would like to break the patent and technology barriers of Japanese and American companies and to enhance and competitiveness of Taiwan companies in international markets.

Original　　Noiseware: 0 votes　　Our Method :21 votes

代表圖及中英文說明：

階層式降雜訊:
Imagenomic Noiseware、高頻、邊、金字塔、低頻、抹平滑，希望發展成適合即時內嵌式硬體實現。
Hierarchical Noise Reduction, Imagenomic Noiseware, High Frequency, Edge, Pyramid, Low Frequency, Smoothing, Aim for Real-Time Embedded Hardware Implementation.

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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, Tumor, Molecular Epidemiology

研究計畫 Research Projects

1. 微核醣核酸調控腫瘤進展的微環境因子與分子機制--微核醣核酸在乳癌轉移的角色探討
2. 全基因體關聯研究找到的單一核甘酸基因多形性變異與乳癌危險性，分子類型與預後的關係
3. 自動乳房超音波之電腦輔助診斷
4. 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
5. 乳房彩色彈性超音波之電腦輔助診斷
6. 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
7. 乳房磁振造影電腦輔助偵測與功能性評估系統之研發
8. 家用型雙波段乳癌紅外線診斷系統
9. 微流體平台進行藥物篩選與化療療效監測
10. 經前婦女可切除乳癌之CYP19(TTTA)重複多型性研究
11. 多國多中心、開放性、分為兩組的第三期試驗，評估 bevacizumab 輔助性治療對三項標記陰性乳癌之療效
    BEATRICE (Protocol BO 20289): An international multicentre open-label 2-arm phase III trial of adjuvant bevacizumab in triple negative breast cancer
12. 隨機分配、多國多中心、第二階段的臨床試驗，針對局部晚期、發炎性，或早期 HER2 陽性之乳房腫瘤的病人， 評估trastuzumab 合併 docetaxel對trastuzumab 合併 docetaxel 及pertuzumab對trastuzumab 合併 pertuzumab治療
    A randomised, multicenter, multinational Phase II study on trastuzumab plus docetaxel versus trastuzumab plus docetaxel plus pertuzumab versus trastuzumab plus pertuzumab in patients with locally advanced, inflammatory or early stage HER2 positive breast cancer
13. 以Herceptin單一或合併Taxane療法作為第一線使用在先前HER2呈陽性初期乳癌時曾接受Herceptin輔助性治療後復發的轉移乳癌患者之第二階段臨床試驗
    Phase II study of HFerceptinÒ, alone or in combination with a taxane, as a first-line treatment for patients with metastatic breast cancer, who have relapsed after receiving Herceptin in the adjuvant setting for HER2 positive early breast cancer

14. 以Lapatinib、Trastuzumab及其組合併用paclitaxel輔助治療罹患HER2/ErbB2陽性原發性乳癌婦女之隨機、多中心、開放性第三期臨床試驗
    A randomised, multi-centre, open-label, phase III study of neoadjuvant lapatinib, trastuzumab, and their combine plus pailtaxel in women with HER-2/ErbB2 positive prrimary breast cancer
15. 一項隨機、多中心、開放性、第三期臨床試驗、研究連續與合併使永輔助性之Lapatinib與Trastuzumab於治療HER2/ErbB2陽性之原發性乳癌病患
    A randomised, multi-centre, open-label, phase III study of adjuvant lapatinib,trastuzumab, their sequence and their combination in patients with HER2/ErbB2 positive primary breast cancer
16. 第三期隨機分配之臨床試驗 : 比較黃體期或濾泡期進行卵巢切除術併用Tamoxifen用於停經前婦女荷爾蒙受體陽性轉移性乳癌之療效
    Phase III randomizated study of luteal phase vs follicular phase surgical oophorectomy and tamoxifen in premenopausal women with metastastic hormone receptor- positive breast cancer

計畫名稱：以乳房超音波及乳房攝影術進行臺灣40-49歲婦女乳癌篩檢隨機試驗
補助單位：行政院衛生署國民健康局

台灣地區40-49歲婦女乳癌的問題相當重要，國內婦女乳癌發生率之高峰較國外年輕，主要集中在45-55歲，且年輕族群的乳癌發生率每年以相當驚人的速度在成長。然而有鑒於乳房攝影術較不適用於50歲以下之婦女，是否可使用超音波篩檢來提高效益，是相當值得探討的問題，雖然在臨床上已有許多文獻支持，不過這些發現都是基於臨床病人，而其接受超音波或乳房攝影術的原因(Indication)並非全來自篩檢，部份是因為已有症狀（如腫塊）。所以超音波檢查是否較乳房攝影術對於早期乳癌發現效益更大，亟待實證醫學評估。

本計畫之主旨在利用臨床隨機試驗證明乳房超音波與乳房攝影術對台灣地區40-49歲婦女乳癌之篩檢效益。在此研究計劃中之目的如下所述：

(一) 針對40-49歲設計一個以族群為主的隨機試驗，對乳房攝影術及乳房超音波進行下列比較：
篩檢方法敏感度及精確度比較，敏感度指標有三：
1. 相對敏感度指標：計算在診斷為乳癌個案中各種篩檢工具診斷為異常者之比例
(包括localized benign及疑似個案)
2. 計算篩檢12個月後篩檢間隔個案佔所有個案比例
3. 計算在篩檢後1年及2年內篩檢間隔個案佔基本發生率之比例

(二) 比較乳房超音波及乳房攝影術+超音波篩檢工具對於病人回診率之差異

(三) 比較兩種篩檢工具降低第二期癌症或以上之效益

(四) 比較兩種篩檢工具降低乳癌死亡率之效益

本計畫共分五年進行，內容包括進行研究中心臨床隨機分配、組織及倫理面(Organization and Ethical Aspect)、社區公共衛生資源動員(Mobilization of Community Resources)、臨床篩檢轉介、確診流程作業標準化、大規模邀請及進行乳房攝影術與超音波篩檢(Large-scale Mass Screening)、研究中心、參與醫院、及衛生局所資訊系統之建立、早期評估超音波及乳房攝影術之轉介、回診、確診狀況、敏感度及精確度、臨床隨機分配三組間早期效益（如第二期癌症以上降低）之比較、及預測兩種篩檢（乳房超音波及乳房攝影術）乳癌死亡率之降低情形。

Project title: A population-based cross-over randomized controlled trial of breast cancer screening with alternate mammography and ultrasound for women aged 40 to 49 years in Taiwan

Supported by: Bureau of Health Promotion, Department of Health

As there is paucity of data on population-based screening for breast cancer using mammography and ultrasound for oriental young women aged 40-49 years, the peak of incidence rate and high proportion of dense breast, we aimed to evaluate the relative performance of detecting breast cancer between ultrasound and mammography and also to assess complementary efficacy of ultrasound to mammography screening.

Methods: A total of 79,691 female residents aged 40-49 years were invited from community in Taiwan since late 2003. These participants were first randomly assigned to mammography (n=20040), ultrasound (n=20088), and control group (n=39563). The two former groups were further done by a cross-over design with mammography and ultrasound on alternate year until 2008. Detection rate and annual incidence rate of interval cancer as a percentage of the control group (I/E ratio) were compared between mammography and ultrasound.

Results: The attendance rate of the first round was 59% (11921/20040) for mammography and 56% (11249/20088) for ultrasound. The repeated attendance rate of both groups was 85% in the second round and 91% in the third round. In the first round of screen, the detection rate of breast cancer for the mammography group (0.34%) was 1.5-fold compared with the ultrasound group (0.22%). The additional detection rate was 0.16% contributed from a subsequent ultrasound screen and 0.36% contributed from a subsequent mammogram screen. The combination of mammography with ultrasound was as three to four times as likely to detect breast cancer compared with the control group (annual incidence rate was 0.17%). The I/E ratio was lower after mammography screening than that after ultrasound screening.

Conclusion: The current randomized controlled trial not only demonstrated higher detection rate and better performance using mammography but also indicated the complementary role of ultrasound applied to young Taiwanese women. This further suggests the optimal screening modality for young women in Asian country is to combine mammography with ultrasound.

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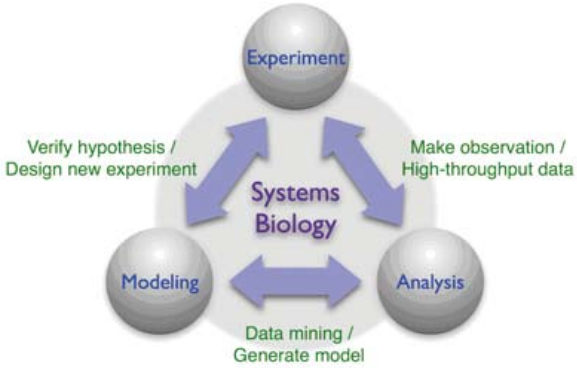
國立臺灣大學分子與細胞生物學研究所 教授

Professor, Graduate Institute of Biomedical Electronics and Bioinformatics/ Department of Life Science/ Institute of Molecular and Cellular Biology, 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，及微型RNA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在ATP合成酶抑制劑誘導下乳癌及肺癌細胞進行細胞凋亡的作用機制；同時，利用系統生物學研究法來開發新的藥物。



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

MicroRNAs are short single-stranded non-coding RNA molecules which play a key role in post-transcriptional regulation of mRNAs. A miRNA can affect many downstream targets which in turn form a complicated network. Our lab has characterized the roles of miRNAs in the regulation of cellular networks and revealed that miRNA-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

Systems Biology, Proteomics, Bioinformatics

研究計畫 Research Projects

1. 調控ATP合成酶基因之微RNA功能及演化
   Evolution and functions of microRNAs that regulate ATP synthase subunit genes
2. 幽門桿菌感染胃癌細胞之基因網路研究：annexin A4相關的訊息傳遞及調控機制
   Gene network of host cell by Helicobacter: annexin A4 involved singalling and regulation in gastric cancer.
3. 利用系統生物學開發抗肺癌藥物：以ATP合成酶抑制劑進行標靶治療及機制探討
   Applying systems biology for anti-lung cancer drug discovery: targeting therapy by ATP synthase inhibitors and molecular mechanism study

計畫名稱：調控ATP合成酶基因之微RNA功能及演化
補助單位：行政院國家科學委員會
計畫期間：2010/08/01-2013/07/31

ATP合成酶是由DNA解旋酶和氫離子馬達結合，藉由氫離子梯度使馬達旋轉，而驅動ATP合成，這樣的旋轉機制在演化過程中效率漸增。因為ATP合成酶是一個古老的蛋白質，探討是否早在後生動物演化時，就已出現微RNA調控ATP合成酶次單體基因的現象，是一個相當有趣的議題。這些微RNA是否對這些次單體基因的表現程度有不同的影響？此影響是否會引起這些次單體表現量的平衡？我們想知道不同的微RNA是否會在相同的時間點被啓動，而當ATP合成酶的表現大量受到微RNA抑制時對細胞造成的結果又是如何？

本計畫主要的目標是要探討在演化上微RNA於ATP合成酶次單元基因調控中所扮演的角色。

特定目標：

1. 預測並實證調控人類ATP合成酶次單體基因的微RNA。
2. 闡明這些微RNA是否對ATP合成酶次單體表現程度有不同的影響，及其所造成的生物性結果為何？是否會抑制癌細胞生長？
3. 研究在動物演化的過程中，調控ATP合成酶次單體基因的微RNA及其調控網路何時被啓動？
4. 找出影響調控ATP合成酶次單體基因的微RNA轉錄因子。在動物演化過程中，這些因子何時被啓動去調控這些微RNA？

在本研究計畫中，我們期望能夠了解調控ATP合成酶次單體基因的微RNA及其網路於動物演化過程中所扮演的角色。此研究也許有助於釐清微RNA於演化的重要性。

Project title: Evolution and functions of microRNAs that regulate ATP synthase subunit genes
Supported by: National Science Council
Project period: 2010/08/01-2013/07/31

ATP synthase is a multimeric protein complex that catalyzes the synthesis of ATP. It is essential for almost all organisms because ATP is the common "energy currency" of cells. The modular evolution theory for the origin of ATP synthase suggests that two subunits with independent functions, a DNA helicase with ATPase activity and a H+ motor, were able to bind together, so the rotation of the motor drive the ATPase activity of the helicase in reverse. This would then evolve to become more efficient, and eventually develop into the complex ATP synthases seen today. Since ATP synthase is such an important protein and since it is a complex with many subunits, we are curious as to whether ATP synthase is regulated by many miRNAs. Although protein complex subunit genes tend to be less regulated by miRNAs, our predictions suggest that some ATP synthase subunit genes are targets of different miRNAs. In view of the fact that ATP synthase is an ancient protein, it is interesting to ask whether the miRNA regulation of subunit genes arose early in metazoan evolution. Another question is whether these miRNAs have very different effects on the expression levels of subunit genes, a situation that would pose a problem of dosage balance among the subunits. Indeed, when a subunit gene becomes a new miRNA target, how is the dosage balance among subunits maintained? We therefore ask if the different miRNAs were recruited at similar times. A natural question to ask is what the consequences are when the express level of ATP synthase is substantially reduced by miRNAs. A simple test is to see whether it can suppress cancer growth.

Our major objective is to provide much detail on how the role of miRNAs in ATP synthase subunit gene regulation has been expanded in evolution, especially in the lineage leading to human. Our specific aims are:

1. To predict and validate miRNAs that regulate human ATP synthase subunit genes.
2. To elucidate whether these miRNAs have very different effects on ATP synthase subunit expression levels, what are the biological consequences when the ATP synthase level is significantly reduced by miRNAs and whether it can suppress cancer growth.
3. To study when these miRNAs were recruited to regulate ATP synthase subunit genes during animal evolution and how their regulatory networks have evolved?
4. To find out the transcription factors (TFs) that regulate the key miRNA genes regulating ATP synthase subunit genes. To address the questions: "when were these TFs recruited to regulate the key miRNAs?" "Were they recruited at similar times or at very different times during animal evolution?"

With the proposed study, we expect to understand the roles of the miRNAs that regulate ATP synthase subunit genes in the evolution of regulatory networks during animal evolution. It may provide in-depth information on the impact and importance of the evolution of miRNAs.

The homologous miR-193a/b precursor sequences from different species and the phylogenic tree.

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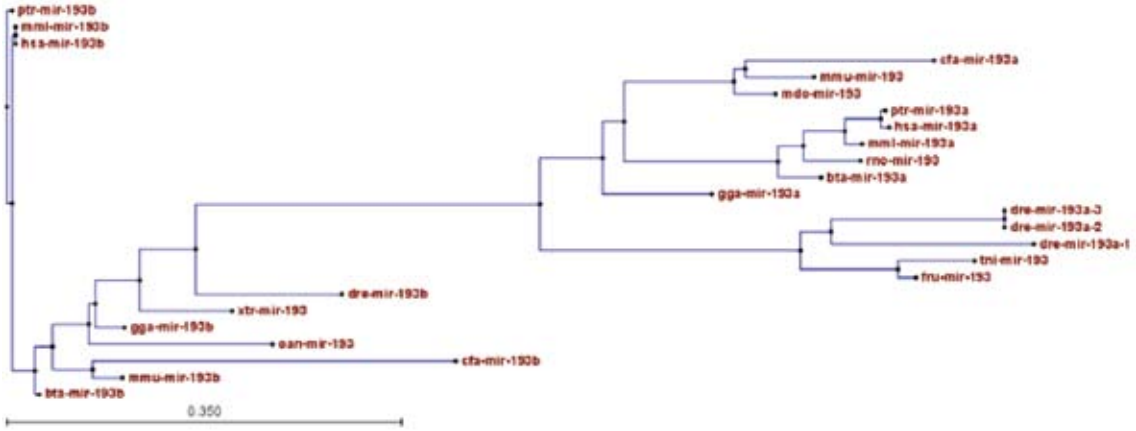
本圖顯示調控ATP合成酶次單體基因的微RNA miR-193a/b前驅物在不同物種的演化關係。

代表圖及中英文說明：



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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

生物資訊實驗室
Bioinformatics Lab.

本研究室的研究方向為生物資訊與基因演算法。現有醫學、分子生物學、植物學、植物病理、資訊科學、電子電機工程、等，多種背景的學生、研究人員及國內外學者，進行常態性的跨領域合作。目前正進行的研究題目包括–蛋白質交互作用網絡的架構、預測與分析，基因交互作用網絡的架構、預測與分析，第二代定序技術之序列重組、註記與量化分析等。

透過基因變異的比對、蛋白質與基因交互作用的定性資料、基因晶片的定量資料、以及目前日益普及的第二代定序技術所生產的大量序列片段，我們期望了解遺傳疾病、癌症、精神疾病等的致病機制，協助疾病的診斷、預防和治療。同樣的研究方法也應用在其它物種的研究工作上，藉此探究植物的抗（生物與非生物）壓力機制，以及植物與病菌間的蛋白質交互作用，協助開發抗壓抗病高產量高品質的農產品。除此之外，我們也分析大腸桿菌與酵母菌等重要模式物種的基因功能與生化路徑，辨識基因間或蛋白質間的交互作用，進一步推論其它物種的運作模式。許多植物與藻類均為重要的能源作物，可用於生產生質酒精或柴油等，目前的第二代定序技術除可用於模式物種外，針對於非模式物種也進行大量的解序與基因表現分析，龐大且複雜的序列資料讓這個高通量的技術無法徹底發揮潛能，特別是目前可用的資料處理工具甚為匱乏，本研究室除了分析此類資料外，亦開發相關工具和創新的演算法，提升此類資料處理的效率和準確度。

The research focuses of this laboratory are bioinformatics and Taiwanese research. In bioinformatics, our lab apply genetic algorithm and combinatorial optimization to biological problems, solving problems from microarray analysis, protein structure prediction, protein-protein interaction prediction, drug discovery and design, and virtual screening of drug leads. These diverse topics can also be combined into systems biology, study biological problems from a global view. We also tried to translate our researches into applications in clinical medicine and drug developments. In Taiwanese research, we have devoted to the computational linguistics of Taiwanese, including input (optical character recognition) and output (Taiwanese voice synthesis). In the future, we would like to incorporate other elements, and construct a more integrative Taiwanese-computer environment, and facilitate the education of mother tone and archival research.

主要研究領域 Major Research Areas

生物資訊、計算分子生物學、基因演算法

Bioinformatics, Computational Molecular Biology, GA- Based Computing Technologies

研究計畫 Research Projects

計畫名稱：植物，真菌與微生物系統生物學分析工具與資料庫整合分析平台開發架設

補助單位：行政院國家科學委員會

計畫期間：2010/08/01-2012/07/31

研究主要目的是整合microarray和蛋白質交互作用資料，針對的物種是模式植物阿拉伯芥，以及能將植物纖維糖化為五碳糖或六碳糖的真菌與細菌。為了達到研究目標，第一步將開發一個分析工具，暫名PrAccessFinder–讓我們輸入已經分群處理過的microarray資料，點選分群樹上某一節點，節點之下的探針（probe）序列會自動轉成GenBank ID，最終輸出這些基因所對應的蛋白質之間的交互作用網絡圖，網絡圖上每個蛋白質或每筆PPI 的重要性可使用本工具計算。第二步將建立一個阿拉伯芥系統生物學分析平台，暫名為At-omics–使用PrAccessFinder將阿拉伯芥的microarray 資料和PPI網絡圖連結分析；並匯整KEGG pathway資料庫等，製作顯示基因表現變化與時間軸的pathway影片；也將自動化計算挑選microarray資料中，不同實驗條件下表現模式類似的基因。第三步會建立一個纖維水解資料整合分析平台，暫名為CelluKnow，分析細菌或真菌與植物纖維代謝有關的microarray資料，尋找基因表現受到cellulose影響或表現模式與cellulase接近的基因；依照KEGG pathway圖示基因表現的相對變化模式；也將計算每個基因和每筆PPI 的重要性，辨識出與cellulose代謝顯著相關的核心基因。核心基因將依序列相近度，對照到重要纖維水解研究中的物種如Xanthomonas spp.和Trichoderma spp.。本研究對microarray 和PPI 的分析，植物，真菌和微生物的系統生物學，以及纖維酒精的研究有所貢獻。

Project title: Developing bioinformatics tools and on-line platforms for analyzing systems biology databases of plants, fungi, and microbes

Supported by: National Science Council
Project period: 2010/08/01-2012/07/31

The objective of this project is to integrate the microarray and protein-protein interaction (PPI) databases, focusing on the organisms such as the model plant Arabidopsis thaliana, and fungi and microorganisms which are able to convert plant cellulose into pentose or glucose. To achieve our objective, firstly, we will develop an analytical tool, designated "PrAccessFinder", which allow us to input a clustered tree of gene expression patterns from microarray, choose a cluster of probes to be convert into GenBank IDs by clicking on node of the tree, and output a PPI network of proteins encoded by the genes in the cluster. The tool will also be able to calculate the significance of each protein and PPI. Secondly, we will develop a systems biology research platform, designated "At-omics", to merge Arabidopsis thaliana databases. This platform will employ PrAccessFinder to merge the microarray data of A. thaliana with PPI networks. We will also produce series of film strips showing the changes of gene expression over time on KEGG pathways. The similarities of gene expression patterns across various experimental conditions, as assayed by microarrays, will also be compared. Lastly, we will develop a systems biology research platform for the cellulase-producing fungi and microorganisms, designated "CelluKnow". We will identify gene expression patterns which are affected by cellulose and genes which are co-regulated with cellulases in microarray data. The gene expression patterns will be illustrated based on the KEGG pathways. The PPI networks and significance of each gene and PPI will be calculated to discover the "core-genes" which are most relevant to the cellulose metabolism in the organisms. Sequences similar to the above "core-genes" will be identified in Xanthomonas spp. and Trichoderma spp., which are important organisms in the study of cellulases. This project will contribute significantly to analyses of microarray and PPI databases, the systems biology of plants, fungi and microorganims, as well as the development of cellulosic ethanol industry.

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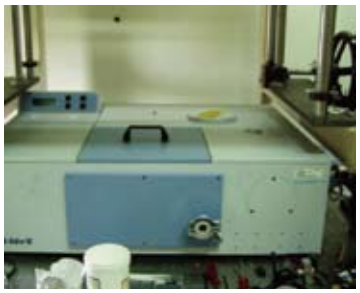
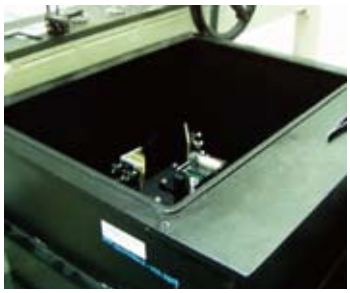
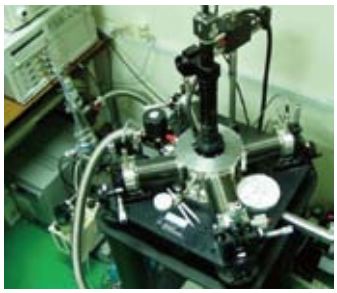
E-beam and Nano Device Lab.

- 電子束直寫顯影實驗室、電子束掃瞄及顯影實驗室
  (Direct-Writing Electron Beam Lithography System Lab., Scanning Electron Microscope 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.)



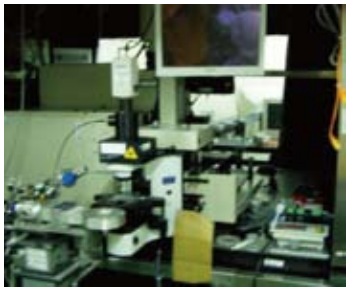


Bruker FTIR 紅外線光譜儀及變角度反射模組



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
（今年新增XY平面定位掃瞄功能）

電子束微顯影系統

主要研究領域 Major Research Areas

紅外線光偵測器、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. 發展奈米結構增強光偵測與光發射
   Development of nano-tructures to enhance light detection and emission
2. 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
3. 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
4. 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
5. 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
6. 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
7. 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

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Assistant Professor, Graduate Institute of Biomedical Electronics and Bioinformatic/
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細胞行為實驗室
Cell Behavior Lab.

本實驗室主要研究課題在於瞭解細胞間如何使用物理性因子互相調節功能，以及改變環境物理性質。我們特別對細胞間以及與環境間的機械力傳遞感到興趣。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，而且絕大多數的細胞均能產生。因此在大範圍組織整合的初始過程，包括組織發育、修補、以及退化，力學訊號可能扮演了具有相當決定性的角色。目前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，以及各種機械性刺激對細胞移動的影響。我們的短期目標是發展出能精確測量、並調控細胞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啓益。

The primary interest of our lab is to investigate cell-cell communication via various biophysical factors. Specifically, we examine how cells regulate each other using mechanical and optical signals. Compared with biochemical agents that are primarily transmitted through diffusion, mechanical and optical signals are relatively long-ranged and transmitted at a faster time scale. Hence these signals may play a deterministic role in the initiation of tissue organization at a large spatial scale such as tissue development, regeneration, and degeneration. Currently we are studying the self-aggregation and integration of homogenous cells, as well as the spatial coordination of a complicated cellular network composed of heterogeneous cells, specifically the stratification between mesenchymal and epidermal cells. Current cell model involves muscle, dermal, and endothelial cells. Our short term goal is to develop a novel platform that can detect and modulate the mechanical and optical cues communicated between cells. The long term goal is to improve our understanding in cellular interactions of heterogeneous cells in various physiological and pathological conditions, and shed light on the therapeutic strategy in tissue regeneration and degeneration.regeneration and degeneration.

主要研究領域 Major Research Areas

組織工程、醫用生物物理、超音波彈性影像

Tissue engineering, medical biophysics, Ultrasonic elasticity imaging

研究計畫 Research Projects

1. 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

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

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

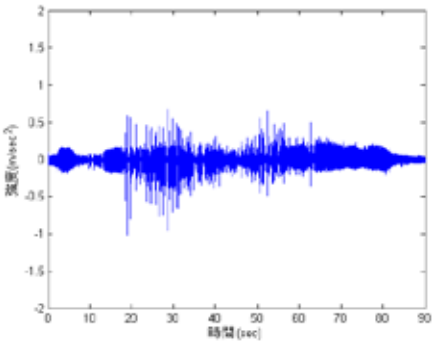
本實驗室由李枝宏教授負責成立於1986年，主要研究領域為數位信號處理之理論與技術研發，近年來也積極進行應用數位信號處理之理論與技術於生醫領域之相關研究：包含(1)由國立臺灣大學醫學院骨科部提供人體膝關節病變與運動傷害所產生之振動訊號，應用相關信號處理理論研發建立此振動訊號之數學模型的技術，以協助臨床上分析診斷人體膝關節病變與運動傷害之型態與種類，以期提供醫生進行正確且必要醫療措施所需之資訊。(2)由國立臺灣大學獸醫學系提供馬匹膝關節病變與老化所產生之振動訊號，應用相關信號處理理論研發建立此振動訊號之數學模型的技術，以協助臨床上分析診斷馬匹膝關節病變與老化之型態與種類，以期提供獸醫生進行正確且必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)

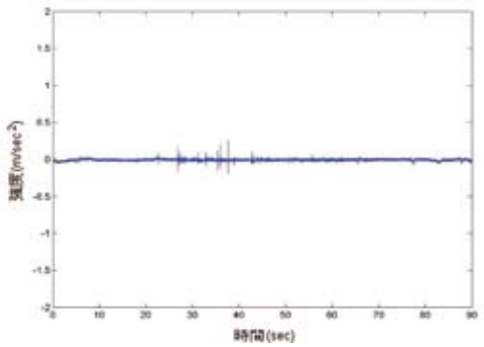
II. STATISTICAL DIGITAL SIGNAL PROCESSING：
   (1) Adaptive Signal Processing for Array Signals
   (2) Adaptive Array Beamforming Under Random Mismatches
   (3) Adaptive Array Bearing Estimation Under Random Mismatches
   (4) Adaptive Beamforming Using 2-D Circular Array for Wireless CDMA Systems
   (5) 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

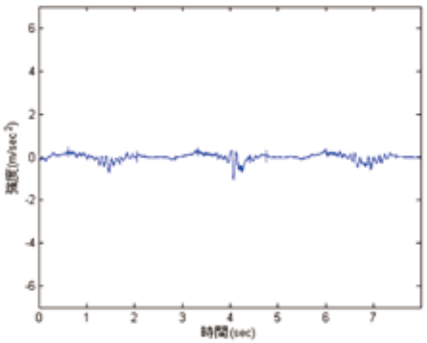
Goal of this research: To conduct research on Vibration Arthrometry (VAM) and provide the public a noninvasive, accurate tool (Expert Systems) for the diagnosis of joint disorders in clinical medicine.



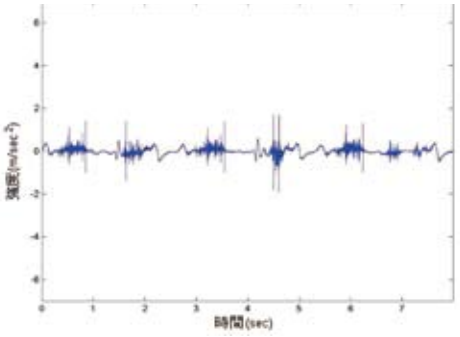
(A) 正常著膝關節在慢速擺動下所產生的振動訊號 (Physiological Patellofemoral Crepitus;PPC)



(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
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

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李嗣涔 教授 *Si-Chen Lee* Professor

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薄膜電晶體實驗室
TFT Lab.

薄膜電晶體實驗室（TFT Laboratory）由李嗣涔教授領導，是台灣大學電子工程學研究所奈米電子組（Nano Electronics Group）的實驗室，實驗室的研究方向為：室溫窄頻電漿子紅外線發射器、雷射與波導型紅外線熱輻射發射器；多頻道量子點紅外線偵測器；窄頻紅外線照射對植物生長基因表現之研究；孔洞形狀對表面電漿子的異常穿透效應；兆赫等級之量子環偵測器及非晶矽與多晶矽薄膜電晶體的創新製程研究等。本實驗室利用表面電漿效應，首度開發出室溫、窄頻且可調變波長之紅外線發射器，且成功地應用在植物生長基因表現之研究上。在未來，我們將研究窄頻紅外光如何影響癌細胞生長和基因表現。

利用電漿子或波導型熱輻射紅外光源之窄頻寬的特性，我們可研究在不同波段下，生物持續受到紅外光照射時，其成長型態、基因表現，以及所有蛋白質的增減變化。主要使用的波段有 3-5 μm ，其半高寬可達0.5 μm 的窄頻寬，利於未來針對特定波段作進一步研究。

本實驗室研究發現，大腸桿菌進行24小時的紅外光照射後，能測量其菌落在不同紅外光波長下照射的變化。藉由量測菌落直徑，可統計大腸桿菌受不同波段紅外光影響的生長變化，如圖一所示。此外，利用二維電泳分析法，可測量照射紅外光後的大腸桿菌，其蛋白質表現量的變化。當特定波段紅外光促進大腸桿菌生長時，某些膜蛋白質會出現正調控的現象。在肺癌細胞A549接受紅外光照射的研究上，我們發現當照射波長3-5μm紅外光48小時，可影響肺癌細胞A549的成長，和控制組相比會有明顯細胞數量上的差異，細胞直徑則有膨大的現象發生，如圖二細胞計數器的結果所示。

The Thin Film Transistor lab is led by Professor Si-Chen Lee. It belongs to the Nano Electronics Group of the Graduate Institute of Electronics Engineering of National Taiwan University. The research directions of this lab are: the surface plasmonic infrared thermal emitter, waveguide infrared thermal emitter and laser at room temperature; the multi-color quantum-dot-infrared photodetectors; the effect of narrow band infrared illumination on the expression of the plant genes; the hole shape effect on the extraordinary transmission of the surface plasmon polariton; the quantum-ring infrared photodetectors in the THz range and the new fabrication processes of the a-Si:H and poly-Si thin film transistors.

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Our lab has developed the narrow bandwidth, tunable wavelength and room temperature-operated infrared thermal emitter. It is utilizing the surface Plasmon theory to operate. It has been applied successfully to observe gene expression during the plant growth. In the future, we plan to investigate the growth and gene expression of cancer cell after illuminated by narrow bandwidth infrared radiation.

The narrow bandwidth characteristic of plasmonic thermal emitters is used efficiently to compare growth morphology, gene expression and proteins of organism under different infrared wavelength. There are common wavelengths applied to research, such as 3-5 μm. Their full width half maximum (FWHM) are about 0.5 μm.

Escherichia coli (E. coli) growth morphology is inspected by colony spot diameter and analyzed statistically as shown in Fig. 1. In order to compare proteins expression between experimental group and control group, two-dimensional gel electrophoresis is used after E. coli exposed by infrared radiation or just growing in dark. Recently, we found that while the specific wavelength of infrared radiation can increase E. coli growth rates, some membrane proteins are up-regulation obviously. A549 lung cancer cells are exposed by infrared light wavelength 3-5μm generated by filter for 48 hours. The cell number and diameter are measured by cell counter as shown in Fig.2. We found that A549 lung cancer cells showed hypertrophy and cell number was decreased obviously.

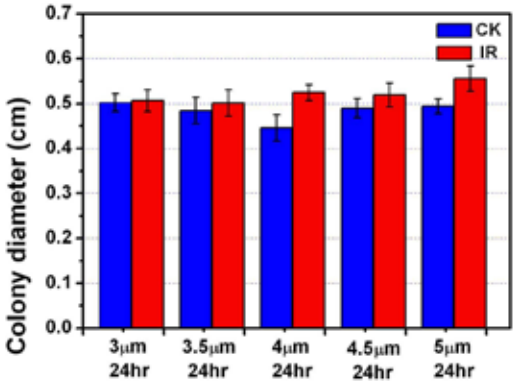

Fig.1 *E.coli* colony diameter chart after infrared exposure

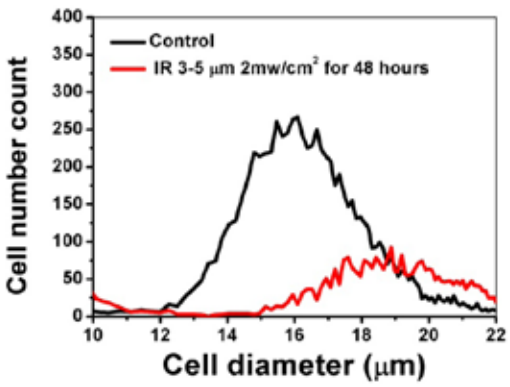

Fig.2 A549 lung cancer cell number and diameter chart

主要研究領域 Major Research Areas

量子點及量子環偵測器、非晶及多晶矽薄膜電晶體、電漿子熱發射器及其在癌細胞、植物生長之應用、太陽電池

Quantum Dot and Quantum Ring Photodetector, Amorphous and Poly-Si Thin Film Transistor, Plasmonic Thermal Emitter and Its Application to Biotechnology and Cancer Cell, Solar Cell

1. 能源國家型科技計畫-計畫辦公室設置與運作計畫
   National Science and Technology Program：Energy Office Administrative Project (2011)
2. 100年度奈米國家型科技計畫：1~10 μm窄頻高功率紅外線光源研發及其在矽光子學，生物技術及癌症治療上的應用
   2011 National Science and Technology Program for Nanoscience and Nanotechnology： Development of 1~10 μm Narrow-band High Power Infrared Light Source with Applications in Si-photonics, biotechnology and cancer therapy (2011)
3. 利用奈米微結構的高效率可撓式薄膜太陽能電池與異質接面矽晶太陽能電池
   High Efficiency Flexible Thin Film Solar Cells and Heterojunction Solar Cells by utilizing Nano-structure
4. 製成條件對銦鎵鋅氧化物(IGZO)薄膜之影響與分析

計畫名稱：1~10 μm窄頻高功率紅外線光源研發及其在矽光子學，生物技術及癌症治療上的應用
補助單位：行政院國家科學委員會
計畫期間：2011/08/01 ~ 2012/07/31

近年來，本實驗室應用表面電漿效應的原理，製作出Ag/SiO2/Ag三層結構，可操作在室溫、發出高強度且窄頻的紅外光源，利用改變上層金屬銀孔洞之週期，則可以任意調整熱輻射波長，目前我們已經將這項成果發表並申請專利。此外，我們製作出雙波段及三波段的熱輻射器，並在改變二氧化矽厚度時，發現等效折射率的變化會影響紅外線發射器之波長，從理論上也得到印證。利用紅外光吸收頻譜，可觀察不同無機或有機分子對光的吸收峰位在何處，若我們以窄頻段紅外光去照射生物體，且造成其生長型態或基因表現的差異，那我們就可去推敲，可能是何種無機或有機分子在影響生物體的新陳代謝，進而設計實驗去驗證生化反應的調控路徑。我們同時希望在研究過程裡，能瞭解紅外光是如何影響生物成長，加強其正調控和負調控的反應機制，那麼未來無論是正常細胞修復或是異常細胞治療，都可利用適當(時間、波長、強度)紅外光的照射來達成預期的結果。

大腸桿菌是常見的原核生物，由德國細菌學家Theodor Escherich在1885年發現，因為基因簡單、且已經全部測出，在生物科技和微生物學實驗常被用來做基因複製和基因表現的研究。近年來，我們實驗室也運用大腸桿菌來觀察紅外光對基因和蛋白質表現的影響，我們會先選定欲使用的紅外光波長，運用半導體的製程技術和物理光學的原理，調整表面電漿熱輻射發射器的Ag孔洞週期和排列方式。接著，我們會將照光組定為實驗組，進行24小時的紅外光照射實驗，生長箱環境則控制在溫度37°C和濕度85%。如圖一所示，表面電漿熱輻射發射器的SiO2層都是厚度100nm，上層Ag的厚度100nm，孔洞週期分別為2.3, 2.6, 3, 3.3 and 3.7 μm，藉由FTIR紅外光譜儀的量測，我們可測得紅外光峰值在3.1, 3.5, 3.9, 4.4 and 5.0 μm。圖二為有照紅外光組和未照紅外光組的大腸桿菌的PCR結果，可發現接受紅外光照射的大腸桿菌，相較於未照光組，其上游基因表現會產生差異，可能造成下游各種蛋白質表現量的正調控和負調控。

Project title: Development of 1~10 μm Narrow-band High Power Infrared Light Source with Applications in Si-photonics, biotechnology and cancer therapy (1/3)
Supported by: National Science Council
Project period: 2011/08/01 ~ 2012/7/31

In recent years, our laboratory has utilized the surface plasma effects to discover the Ag/SiO2/Ag three-layer structure which can be operated in room temperature and generate high power and narrow-band infrared light. By changing the array period of the upper metallic lattice, the peak wavelength can be tunned. We have filed a patent and tried to develop dual-band and three-band thermal radiation devices. We also found that when the thickness of silicon dioxide in the structure is changed, the equivalent refractive index also changes, it will affect the peak wavelength of the infrared radiation. The theory has been developed to verify the experiments. The infrared light absorption spectra are well known for different inorganic or organic molecules. If we illuminate living organisms with narrow-band infrared light , then we can scrutiny the results of growth morphology or gene expression differences. This phenomenon may result from inorganic or organic molecules that affect the metabolism of organisms. We would like to design experiments to verify the path about the regulation of biochemical reactions and understand how infrared light affect organisms growth like increase its positive regulation and negative regulation of the response mechanism. In the future, whether normal cell repair or abnormal cell therapy could use of appropriate (exposure time, wavelength, intensity) infrared light exposure to achieve the desired results.

The German bacteriologist Theodor Escherich discovered Escherichia coli (E. coli) in 1885. E.coli survive for short periods outside the body. Most importantly, E.coli genetics are much simple and manipulated or duplicated easily. In biotechnology and microbiology, E.coli are the famous prokaryotic model organisms. We also use E.coli exposed by infrared light to analyze the expression of its genes and proteins. In the beginning, the specific wavelength of the plasmonic thermal emitter in this experiment is selected. According to the selected wavelength, the lattice constant “a” and the hole diameter “d” of the top silver periodical array could be determined by extraordinary transmission peak formula. The E.coli exposed by infrared radiation is defined as the experimental group. During 24 hours infrared radiation exposure, the temperature and humidity are set at 37°C and 85% RH, respectively. Ag/SiO2/Ag three-layer structure with the variance of upper metallic holes array constant lattice, it can be a tunable wavelength thermal radiation emitter. The SiO2 layer was deposited by Electron beam evaporation with the thickness of 100nm for all samples. Then a 100 nm-thick Ag film perforated with circular holes arranged in hexagonal lattice constant of 2.3, 2.6, 3, 3.3 and 3.7 μm for samples A, B, C, D, and E, respectively were produced by thermal evaporation on patterned photoresist and lifted-off. Then the emission spectrum and full width at half maximum (FWHM) are measured by Fourier Transform Infrared Spectroscopy (FTIR),and the emission peaks of the plasmonic thermal emitters are at 3.1, 3.5, 3.9, 4.4 and 5.0 μm, respectively as shown in Fig.1. The Fig.2 shows the PCR results of the control group and experimental group. The experimental group which was treated by infrared radiation reveals some proteins up-regulated. And the functions of these proteins include catalyzing chemical reactions, membrane transport and chemoreceptor, and even synthesis of nucleoside triphosphates. However, comparing the results of experimental group to the control group, there are some proteins represent down-regulated. And two of them (Flavoprotein WrbA and Single-stranded DNA-binding protein) are related to the DNA. These data could help us to understand that the infrared radiation may affect not only the membrane proteins but also the protein expression in the cell.

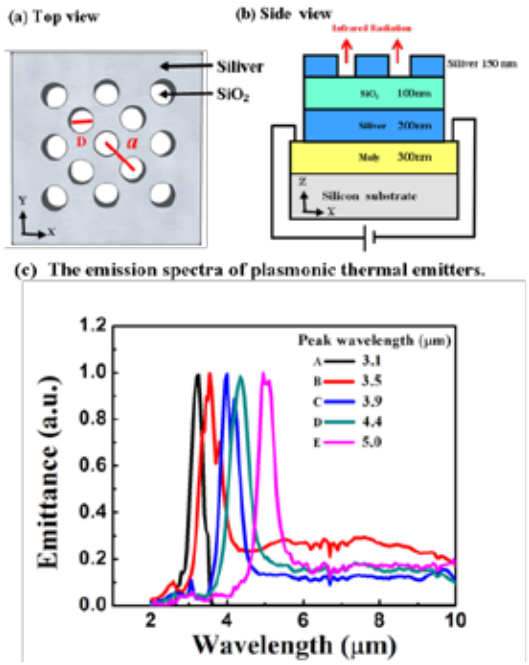

Fig.1

The device we designed to observe the effects of IR on E.coli. The (A) top and (B) side views of the Ag/SiO2/Ag plasmonic thermal emitter. (C) The normalized emission spectra of the five plasmonic thermal emitter lattice samples, A to E. In order to increase the plasmonic thermal emitter temperature, molybdenum was used as a resistance heater. The emission peak wavelengths were 3.1, 3.5, 3.9, 4.4 and 5.0 μ m, respectively.

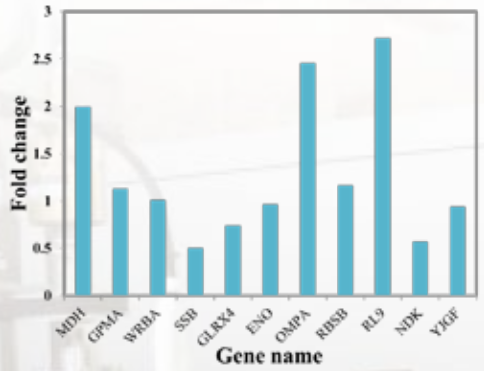

Fig. 2

Confirmation of differential expression is evalued by Real-Time PCR. The fold change is ratio of IR/Control .Yellow grids mean that results of Real-Time PCR and 2D gel electrophoresis analysis are match.

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生醫晶片技術實驗
Bio-Electronics-System Technology Lab.

本實驗室成立於2006年，主要研究方向為奈微米生醫晶片系統相關研究，目前以生物分子檢測技術與微細胞監測技術等領域為研究重點。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子及工程等相關領域，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。

The bio-related research activity is one of the major focuses in world wide research institutes. However, the advancement of bio-research is limited by costly instruments and time consuming analysis. To overcome this obstacle, in our research group, the nano-electronics and micro-mechanism are integrated to be a powerful tool for this emerging research field.

More specific, 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. 奈米場效生物分子感測元件
   Nano FET Biomolecular Sensor
2. 細胞監測晶片研發
   In-Vitro In-Situ Cell Monitoring Chip
3. 奈米螺旋碳管能源擷取元件
   Energy Harvesting Devices Based on Nano- Carbon-Coils
4. 無線感測器網路平台技術開發
   Wireless Sensor Network Platform Technology

計畫名稱：智慧型奈米多晶矽心血管疾病生物標誌診斷系統晶片之研發
補助單位：行政院國家科學委員會
計畫期間：2011/08/01 - 2014/07/31

心臟冠狀動脈(Coronary Artery Disease)退化及心肌退化症，往往會使患者過勞或進行一些劇烈活動時，引起心絞痛甚至造成患者死亡，已經成為國人十大死因之第二名。雖然近幾年來醫學上對於治療心血管疾病有相當之進步，但心臟衰竭之治療仍具有相當之挑戰性及極限，因此如何提供心衰竭患者全面性的照護，是刻不容緩的議題。其中，最為重要的即為心衰竭的長期及緊急照護之用藥，然而，用藥的效果及用量，會因為心衰竭病患基因之不同而有不同的感受性，因此，如何進一步利用DNA晶片技術進行檢驗及資料篩檢即成為心臟疾病相關早期預警及輔助用藥等生醫照護科技下一步重要的發展。

本研究團隊針對此一課題發展以標準半導體製程為基礎的DNA檢測晶片系統。本研究團隊計劃將以對DNA分子及元件表面處理的了解做為為基礎，利用對奈微米電子元件的知識為工具，先以元件理論分析的方式來建構此一DNA檢測晶片的基礎模型，而後以標準半導體製程技術進行DNA檢測晶片及其相關電路之設計及製作，進一步與臨床資料進行分析比對，期能使國內生物感測元件知識與技術可以確實與臨床治療技術更進一步的整合，並可藉由國內獨步全球之半導體製程技術將此一研究成果落實於生物科學之應用層面上，以提升既有之產業價值。

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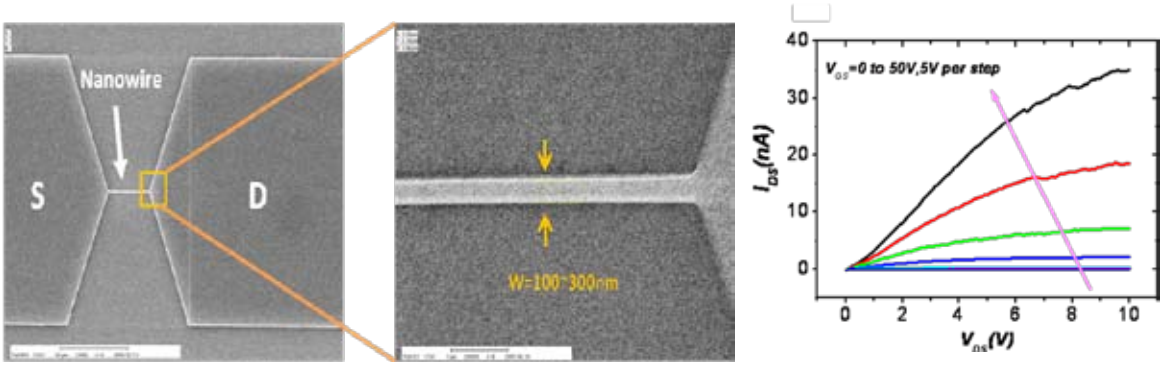
Project title: The development of poly-silicon nanowire sensor-system-on-chip for biomarkers in heart failure diagnosis
Supported by: National Science Fundation
Project period: 2011/08/01 - 2014/07/31

With rapid advancements of System-On-Chip and MEMS/nanotechnologies, a wide variety of new chemical analysis devices and their integrated system, such as biomolecular analysis devices and micro-total-analysis systems, have been designed, implemented, and demonstrated. However, few of them integrated with clinical analysis and achieve the practical requirement of the modern biomolecular diagnosis. As the consequence, this research project will aim at the development of DNA analysis system-on-chip for the clinical heart-failure-medicine-treatment, which is one of the most important steps toward the heart failure disease treatment in both emergency and chronic recovery. In specific, this research project will be based on the basic understanding of electronic devices, biomolecular interaction, and nano/micro fabrication to design and implement the DNA chip for heart-failure medicine treatments. Furthermore, this research project will also compare with clinical data in order to bridge the electronics, bioinformatics, and clinical applications into a fully integrated system.

代表圖及中英文說明：



掃描式電子顯微鏡(SEM)拍攝多晶矽電晶體元件及通道。右圖為奈米線通道的多晶矽電晶體Ids-Vgs 電性圖（L/W = 10um/300nm，熱氧化二氧化矽=1um），右圖為奈米線通道的多晶矽電晶體Ids-Vds 電性圖（L/W =10um/300nm，熱氧化二氧化矽=1um）。

林啓萬 教授 *Chii-Wann Lin* Professor

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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.

林啓萬教授擔任第九屆亞洲化學感測器研討會之大會主席，成功於2011/11/14~17於劍潭青年活動中心落幕，ACCS2013將於泰國清邁舉辦。

本實驗室研究團隊參加「2011台灣生醫暨生農產業選秀大賽」獲得"潛力新秀獎"殊榮

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

1. 結核菌標準化血清抗體及丙型干擾素快速檢測系統之開發及應用(3/3)
   Development of standardized rapid Mycobacterium diagnosis platforms: serum antibody and interferon- γ detection
2. 新型超解析度電漿子成像平臺於量測單分子奈米陣列交互作用之研究(2/3)
   Novel Super-resolution Plasmonic Imaging Platform for Measurement of Single Molecular Interactions on Nano Array
3. 植入式射頻脈衝電刺激無線系統晶片於疼痛控制之應用
   Implantable Wireless Pulsed Radio-Frequency Stimulation CMOS SoC for Pain Control (2/2)
4. Toward Prevention of Sudden Cardiac Death on Smart ECG Patches

計畫名稱：植入式射頻脈衝電刺激無線系統晶片於疼痛控制之應用
補助單位：行政院國家科學委員會
計畫期間：2010/08/01～2012/07/31

本計畫基於經濟部學界科專計畫成果與後續產業投入共同推動，在此計畫中將進一步聚焦於高階植入式醫療器材產品，研發一無電池植入式脈衝射頻電刺激系統於背根神經節(dorsal root ganglion, DRG)抑制疼痛之臨床應用，主要適應症為因退化性疾病或是骨科手術治療癒後不佳，而傷害脊椎神經引起之頑固性下背痛。本計畫已於小動物實驗初步證實可行性與安全性，依目前初步設計驗證之參數，顯示單次施加電刺激療程緩解對疼痛刺激的行為變化且此一顯著差異效果可達三天，進一步發現具有Dose dependent的正向反應。後續將朝向長時間植入實驗以及多區段刺激實驗延伸到大動物部分。此計畫整合醫工、電子、機械、醫學等相關領域的實驗室共同合作。

主要之產品創新功能包含(1)植入式低電壓PRF參數，可客製化調整不同病人實際治療輸出需求；(2)無線功率放大器模組；(3)無線取電PRF SoC刺激系統晶片原型，接受RF能量進行治療參數輸出；(4)植入式電極與固定設計，進行單極或雙極輸出治療；(5)針對門診手術施用流程工具系統之設計，訴求微創手術治療；(6)疼痛行為量化輸出分析；(7)疼痛分子表現輸出分析。

計畫分年度之工作重點，以利未來開發與臨床上產品應用之實現：
(1) 針對下背痛神經疾病機制之持續深入研究
(2) 研發無電池式長期植入之脈衝射頻電刺激晶片
(3) 研發無線傳電、資訊傳輸模組
(4) 設計植入式防水性、生物相容性電極、接頭及封裝外殼
(5) 小動物長期植入晶片效能驗證
(6) 大動物低侵入植入晶片系統流程評估
(7) 本研究設計參數於臨床疼痛評估
(8) 植入式設備於臨床之驗證應用

Project title：Implantable Wireless Pulsed Radio-Frequency Stimulation CMOS SoC for Pain Control
Supported by：National Science Council
Project period：2010/08/01-2012/07/31

Based on the research outcomes in the funded MOEA project from 2002-2008 and the subsequently dedicated resources from industrial sponsor, we will focus on the continuous development of an implantable medical device with features of batterless system-on-a-chip (SoC) which is powered by RF wireless coupling and output of low voltage pulse radio-frequency (PRF) on lumbar dorsal root ganglion (DRG) for pain control. The primary indication is for the failed low back pain patients due to degenerative or stenosis of lumbar nerve in the clinics. In our preliminary results, we have successfully demonstrated the efficacy and safety of proposed concept and technology by showing that the application of a single designated stimulating waveform to the L5 DRG region can significantly alleviate the pain perception for up to three days. Furthermore, it shows dose dependent responses with specific waveform parameters.

Our innovative features include (1) low voltage implantable PRF with re-configurable output for individual differences;(2)wireless power amplifier output module;(3)wireless power coupling to activate PRF SoC；(4) Implantable microelectrode with both bi-polar and uni-polar configuration and fixture structure；(5) design for outpatient visit with minimal invasive approach; (6)quantitative pain score for evaluation；(7)studies of molecular mechanisms.

In the following years, our coordinated efforts with executable steps toward the realization of clinical applicable products include:

(1) Studies of pain mechanisms with PRF
(2) Development of batterless PRF SoC for in vivo long term applications
(3) Development of RF wireless coupling for power and data control
(4) Design and development of water proof, bio-compatible cage, connectors and electrode array
(5) Efficacy and safety studies on repetitive PRF stimulation
(6) Feasibility studies of proposed minimal invasive apparatus and procedure in large animal.
(7) Efficacy studies on bipolar PRF stimulation of our design on clinical trials.
(8) Verification of low back pain patients with implantable PRF device.

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人腦實驗室
Brain Imaging and Modeling Lab.

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. 國科會計畫 -【超快速人腦功能性核磁共振逆影像】
   Ultra-fast functional magmetic resonance inverse imaging of the human brain
2. 國科會計畫 -【平行化腦部磁振造影診斷系統】
   Parallel magnetic resonance neuro-imaging diagnosis system
3. 經濟部計畫 -【腦連結體磁振造影系統】
   Brain Connectome MRI System
4. 臺大醫院計畫 -【多通道核磁共振頭部相列線圈研發】
   Development of multi-channel head coil arrays for magnetic resonance imaging

計畫名稱：利用多種神經影像進行人腦視覺系統之時空映像與系統模擬
補助單位：行政院國家科學委員會
計畫期間：2009/08/01-2012/07/31

本計畫旨在發展一完整的時空映像與系統模擬實驗與分析架構，以應用於人腦感覺、認知與行為的研究。我們認為人類複雜的行為是由於腦內空間不同的區域在時間與空間上相互協調才能產生，而非單一解剖學上的位置所能獨力完成。近幾年來，我們已經發產了一系列時空映像的工具幫助我們達成以非侵入性的方式了解人腦視覺系統的目的。我們將持續這些技術以提高它們的時間和空間解析度，同時也將研究腦內是如何使用遠距同步(long range synchronization)的方式來傳遞和整合訊息。最終希望能了解人腦內在處理感覺與運動的過程中各區域間的因果關係(causality)。

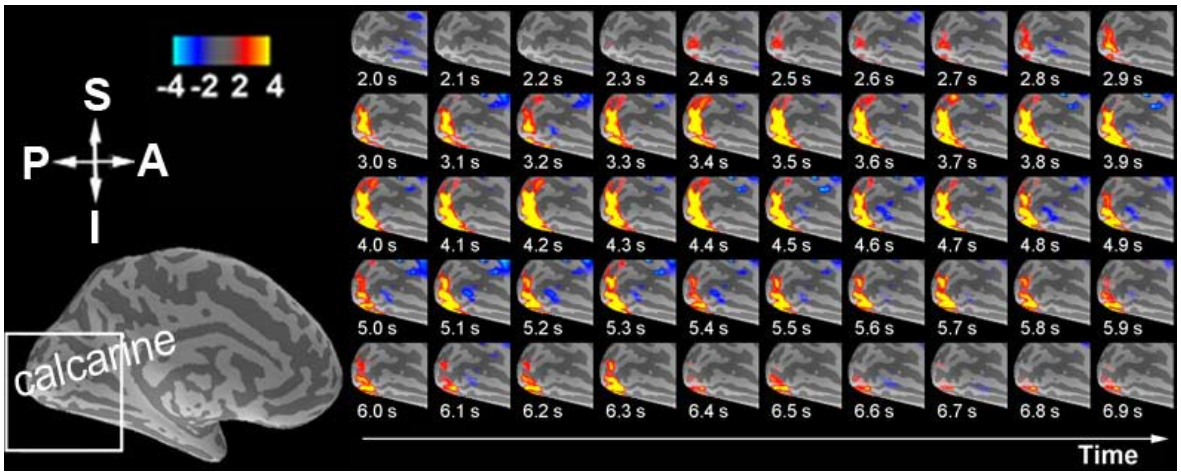
為了達成上述目標，我們發展結合功能性核磁共振影像(functional magnetic resonance imaging, fMRI)與腦電波／腦磁波圖(EEG/MEG)的方式來取得空間上達釐米精準度與時間上達毫秒精準度的神經影像。我們將進一步整合功能性核磁共振影像與腦電波/腦磁波圖的資料擷取，改進新發展之核磁共振逆影像技術(magnetic resonance inverse imaging) 。並利用相位同步的概念探討腦內電訊號如何傳地震盪訊號，進一步在時域以及頻域上量化腦部各區域間的葛氏因果關係(Granger causality) 。最後應用這些技術來研究注意特徵(feature-based attention)在人腦高階視覺中的神經基礎。本計畫所發的各項神經影像工具與視覺研究希望能對臨床科學與神經科學能有所助益。

Project title: Multimodal spatiotemporal brain mapping and modeling of human visual system
Supported by: National Science Council
Project period: 2009/08/01-2012/07/31

The overall goal of our research program is the development of a comprehensive experimental and analytical framework for spatiotemporal imaging and modeling of the neural basis of perception, cognition and action. According to our general model, complex behavior results from the coordinated activity of spatially distributed neural systems rather than specific anatomical sites, giving rise to brain-behavior relationships that are distributed in space and time. To date, we have developed a range of spatiotemporal imaging methods that have enabled innovative, non-invasive studies of the human visual system at higher resolution spatial and temporal resolutions than previously achieved. We now propose to carry forward the development of our spatiotemporal imaging approach by exploring methods for acquiring functional brain imaging data at ever higher rates, probing the brain mechanisms for long-range spatial synchronization and achieving a better understanding of information flow during perceptual and sensorimotor processing by establishing a robust framework for causal modeling.

To these ends we have developed novel methods combining functional MRI (fMRI) and magnetoencephalography / electroencephalography (MEG/EEG) data to obtain noninvasive spatiotemporal maps of cerebral activity with both high temporal (millisecond) and spatial (millimeter) resolution. We propose to continue and extend this technical development. Specifically, we will further improve fMRI and MEG/EEG data acquisition and analysis methods, develop new methods to explore mechanisms of oscillatory brain activity combining fMRI, MEG and EEG data, thereby increasing the accuracy and sensitivity of the spatiotemporal brain imaging approach. Further, we will continue development of causal modeling approaches, allowing study of how large-scale distributed neuronal interactions give rise to perception and cognition. Finally, we will apply these technical advances to studies of human higher visual processing in healthy individuals to study the neural mechanisms of feature-based attention. Given the increasing availability of both MRI and EEG/MEG, our combined approach should have significant impact on understanding the neural basis of behavior.

代表圖及中英文說明：



單一受試者對於視覺刺激以100毫秒解析度INI重建之功能性核磁共振影像(fMRI)時間序列 (TR/TE = 100/30毫秒，Flip angle = 20度，視野 = 200微米)。本實驗使用32通道頭部線圈陣列，資料從128次隨機呈現的刺激中取得，每此測試包含了6秒的baseline，跟接下來的0.5秒8Hz閃爍棋盤格刺激，以及接下來的23.5秒後刺激期 (每次總共30秒)。圖上的時間標記指的是閃爍棋盤格刺激開始後的時間。

A single-subject 100-ms resolution INI fMRI time series of activations to visual stimulation (TR/TE=100/30 ms, flip angle 20º, FOV=200 mm), co-registered to a flattened region of the left occipital cortex. The data were obtained using a 32-channel head coil array in 128 randomized trials, each of which consisted of 6 seconds pre-stimulus baseline, followed by 8-Hz flashing checkerboard flashing for 0.5 sec and subsequently 23.5 s post-stimulus (30 sec in total for each trial). The time stamps labeled in the figure indicate time after onset of the flashing checkerboard.

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Algorithmic Research Lab.

演算法實驗室於2005年成立，目前我們有八位博士班學生與十九位碩士班學生。本實驗室的研究專注於基礎演算法的設計、分析以及應用。

The Lab of Algorithmic Research was established in 2005. We currently have 8 Ph.D. students and 19 master students. Our research focuses on fundamental algorithms and their applications.

主要研究領域 Major Research Areas

演算法、圖論、生物資訊
Algorithms, Graph Theory, Bioinformatics

研究計畫 Research Projects

1. 平面圖之「簡潔編碼」與「簡潔呈現」演算法
   Algorithms for succinct encodings and compact drawings of planar graphs
2. 動態簡潔資料結構
   Succinct dynamic data structures

計畫名稱： 動態簡潔資料結構
補助單位： 行政院國家科學委員會
計畫期間： 2009/08/01-2012/07/31

我們希望在動態簡潔資料結構的研究上，探討如何設計有序根樹的動態編碼。有序根樹(ordinal tree)是一種有根樹，每個樹節點的所有子節點都有固定的順序排列。我們希望能對有序根樹設計出一套動態編碼，達成下列兩個目標：

1. 希望編碼所需的儲存空間，在最高項達到資訊理論上的最佳解。
2. 希望編碼能夠有效率地回答一些對有序根樹的查詢，和支援樹上節點的動態更新。

在靜態簡潔資料結構的研究領域，針對有序根樹的文獻已有廣泛的探討，但在允許快速更新樹節點（新增和刪除）的動態簡潔編碼研究上，迄今相對少見。目前已知最好的結果是由 Chan、Hon、Lam、和Sadakane 在 2005 (2007)年，以及 Arroyuelo 在 2008年所提出的編碼。基於一棵有 n 個節點的樹和 2n 個括號的平衡字串的關係，Chan 等學者針對動態平衡字串，提出第一套使用線性空間的動態編碼方案。他們的結果包含兩種動態編碼，針對不同的查詢，達到O(lg n) 時間和 O(lglg n) 時間的回答和更新效率。學者 Arroyuelo 則進一步將儲存空間降低到 2n + o(n) 個位元，其最高項已達到資訊理論上的最佳解，他們的編碼能在 O(lg n) 時間內支援節點的更新，以及更多種查詢。我們盼望能在有序根樹的簡潔動態編碼設計上，進一步改良現有的方案，研究如何開發新的輔助資料結構，有效率地同時支援樹節點的更新，以及更豐富的查詢。

Project title: Dynamic Succinct data structures
Supported by: National Science Council
Project period: 2009/08/01-2012/07/31

We study the problem of designing succinct dynamic data structures and focus on representing dynamic ordinal trees succinctly. An ordinal tree is a rooted tree where the children of each node are ordered. On the unit-cost RAM model with (lg n)-bit words, we would like to develop a succinct dynamic encoding for an ordinal tree to achieve the following objectives:

1. Minimizing the space usage of the encoding to match its information- theoretical lower bound in the first-order term.
2. Supporting efficient queries and updates in the worst-case time complexity.

While succinct representations for static trees have been extensively studied, the literature is limited on dynamic cases which permit efficient updates (insertion and deletion of arbitrary nodes). The best currently known dynamic encoding for trees are due to Chan, Hon, Lam, and Sadakane in 2005 and 2007, and Arroyuelo in 2008. Based on the natural association between an n-node tree and a sequence of 2n balanced parentheses, Chan et al. gave the first linear space solutions for the dynamic parentheses maintenance problem. They proposed two different O(n)-bit encodings with time efficiency of O(lg n) and O(lg n/ lg lg n) respectively, supporting updates and few queris. Arroyueloe reduced the space to 2n + o(n) bits, whose first-order term is information-theoretically optimal, and supported more queries in O(lg n) time. We propose to improve the results of of Arroyuelo and Chan et al. to achieve a 2n + o(n)-bit encoding for an n-node ordinal tree. We would like to obtain new o(n)-bit auxiliaries that enrich the set of supported queries, and achieve better performance as well for updates in the worst-case poly-logarithmic time.

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主要研究領域 Major Research Areas

非侵入式光學奈米影像與操控、兆赫波與微波生醫應用、奈米超音波
Non-invasive optical microscopy and manipulations, THz and Microwaves for biomedicine, nano-ultrasonics.

研究計畫 Research Projects

1. 倍頻式光學虛擬活體切片術
   Harmonics-based in vivo optical virtual biopsy
2. 建立同調拉曼顯微光譜所需之超短脈衝光纖光源
   Fiber-based light sources of ultrashort pulses for coherent Raman microspectroscopy
3. 奈米聲學與奈米超音波
   Nanoacoustics and nanoultrasonics
4. 使用兆赫波內視鏡檢測癌症的活體動物實驗
   Diagnose Cancer with THz endoscopes: Animal Studies in Vivo
5. 光纖化兆赫波影像與感測系統(3/3)
   Fiber-based THz imaging and sensing systems
6. 使用兆赫波內視鏡檢測癌症的活體動物實驗(2/3)
   Diagnose Cancer with THz endoscopes : Animal Studies In Vivo

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7. 建立同調拉曼顯微光譜所需之超短脈衝光纖光源(2/3)
   Fiber-based light sources of ultrashort pulses for coherent Raman microspectroscopy
8. 奈米超音波與奈米聲學(3/3)
   Nano-ultrasonics and nano-acoustics
9. 一種結合非線性光學顯微術與螢光生命期顯微術來篩檢肝癌的新光學指標
   Optical indices for the screening of hepatocellular carcinoma(HCC)with nonlinear optical microscopy and fluorescence lifetime imaging microscopy(FLIM)
10. 在體內諧波顯微影像對人類皮膚老化的研究
   In vivo harmonic generation microscopic imaging of human skin for studying skin aging
11. 奈米聲學與奈米超音波(1/3)
   Nano-acoustics & Nano-ultrasonics(1/3)
12. 奈米聲學與奈米超音波(2/3)
   Nano-acoustics & Nano-ultrasonics(2/3)
13. 光纖化兆赫波影像系統(1/3)
   Fiber-based THz imaging and sensing systems (1/3)
14. 台俄國合計畫-飛秒光纖CARS顯微光譜生物影像(1/3)
   Fiber format femtosecond CARS microspectroscopy techniques of biological tissues1
15. 倍頻式光學虛擬活體切片術
   Harmonics-Based Invio Optical Virtual Biopsy
16. 國立臺灣大學邁向頂尖大學核心實驗室-分子生醫影像研究中心 核心實驗室計畫
   Molecular Imaging Center Core Facility
17. 以光學虛擬切片分子影像從事早期疾病診斷
   Advanced Optical Virtual Biopsy for Early Disease Diagnosis

計畫名稱：倍頻式光學虛擬活體切片術
補助單位：國家衛生研究院
計畫期間：2010/01/01-2012/12/31

非線性光學顯微術主要是利用高尖峰功率的雷射脈衝在待觀察的生物體內所產生的非線性光學信號來成像。相較於傳統的螢光顯微術與共軛焦顯微術，非線性光學顯 微術只會在焦點產生足夠的光強度，因此先天上就具有優異的三度空間解析度，對生物體的傷害也較小，再搭配位於生物體穿透窗口的雷射光源（1200nm-1300nm），可以大幅減少對生物體的光破壞，同時提升在生物體內的穿透深度，取得生物體內深層的”非侵入式”斷層切片影像。本實驗室的非線性顯微鏡，主要以二倍頻、三倍頻、以及多光子顯微鏡為主。二倍頻可以用來觀察生物體內的非中心對稱的結構，像是膠原蛋白纖維、肌肉纖維、神經管束…等等，三倍頻 則可以用來觀測生物體內各種組織與次細胞結構的型態，多光子螢光則是可以取得生物體內各種分子分佈的影像。我們以中心波長1230nm的飛秒鉻賁橄欖石雷射作為激發光源，以次細胞級的解析度，成功的在自願受試者身上進行不同皮膚疾病的活體觀察，包括良性及惡性的痣、基底細胞癌、鱗狀細胞癌及日光角化症。此外，我們亦將評估本系統在早期診斷糖尿病皮膚末梢神經病變，及分析良性及惡性組織含氧度上的可行性。作為未來臨床上的及時診斷系統。

另一方面，在本年度我們也將此光學倍頻顯虛擬切片系統持續應用在活體皮膚疾病的臨床實驗(如圖A)。此部分最重大的突破是利用倍頻顯微術，我們不但可以分辨此病灶為良性或惡性，更可以利用倍頻影像特徵去明確的判別出疾病種類。此研究分為兩部分，第一部分是利用色素性病灶的手術樣本來建立各個疾病的倍頻影像特徵作為臨床診斷的依據。第二部分為臨床實驗，我們已經執行了32 例人體皮膚色素性病灶的臨床試驗研究，包括基底細胞癌5 例、1 例黑色素細胞癌、17 例痣以及9 例脂溢性角化症。不過在手掌腳掌等部位的皮膚屬厚皮組織，會限制倍頻影像的擷取，因此有5例的臨床實驗不能有效的得到影像。在三位觀察者(其中兩位為皮膚專科醫師)辨別下，我們對手術樣本和臨床實驗總共43個色素性病灶 (27 in vivo, 16 ex vivo) 作了敏感性與特異性的統計。每種疾病皆呈現兩種具有獨特性的影像特徵的條件下，我們可以得到辨別出黑色素細胞癌、基底細胞癌、痣以及脂溢性角化症的總敏感性和特異性為98.5%和96.2%。在倍頻顯微術觀察後，受試者的手術樣本會作一般性的組織病理切片處理，並且利用此病理切片觀察出沒有明顯組織損壞。

Project title: Harmonics-based in vivo optical virtual biopsy
Supported by: National Health research Institutes
Project period: 2010/01/01-2012/12/31

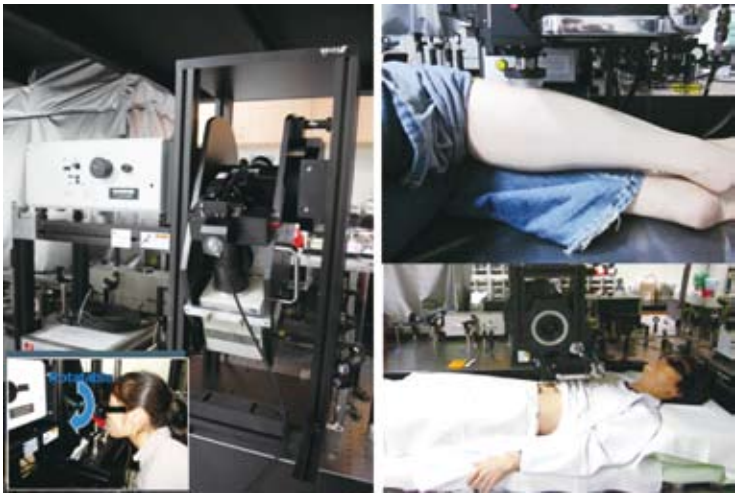
Compared with traditional reflection/fluorescence confocal microscopy, nonlinear optical microscopy can avoid out-of-focus photo-damage and is with an intrinsically three dimensional sectioning capability. Combined with a laser source with an emission wavelength at the biological penetration window (1200-1300nm), it can further reduce photodamage and increase the penetration depth in live biological specimens. In our lab, we focus on the development of multimodal nonlinear microscopy combining second harmonic generation (SHG) and third harmonic generation (THG) signals, while minimizing the usage of multi-photon fluorescence signals. SHG microscopy is generally used to observe non-centrosymmetric structures, THG microscopy is generally used to provide morphological information, and multiphoton fluorescence microscopy is generally used to provide molecular images. Based on a femtosecond Cr:forsterite laser with a central wavelength at 1230nm, in vitro and in vivo clinical trials have been conducted to solidify the system's capability and credibility for evaluating different cellular condition, structural protein distribution, and molecular morphology. These clinical studies ultimately will lay firm medical foundation for our HGM system to noninvasively identify and evaluate different diseases in the subclinical stage. Research topics include benign and malignant skin lesions, different types of skin carcinoma and actinic keratosis. The system capability in the early diagnosis of diabetic neuropathy and differentiating tissue oxygen level in benign and malignant lesions will also be studied.

To reduce mortality, the ability to precisely diagnose the malignant skin lesions at early stage is strongly required. In vivo harmonic generation microscopy (HGM) has shown utility to be a noninvasive imaging tool without any staining and fixing. We demonstrated the feasibility of harmonic generation microscopy for in vivo differential diagnosis of pigmented skin lesions. Forty-three pigmented skin lesions including melanoma, basal cell carcinoma, melanocytic nevi and seborrheic keratosis have been investigated. Blinded analysis of images was carried out by three observers to determine the sensitivity and specificity. Using these presences of morphological features, the classification results with a sensitivity values up to 98% and a specificity values up to 96% for differential diagnosis were achieved. After HGM evaluation, the surgical specimen was processed for routine histological section and there is no visible damage can be observed from the histological biopsy.

代表圖及中英文說明-1：

倍頻式光學虛擬活體切片系統架構圖。

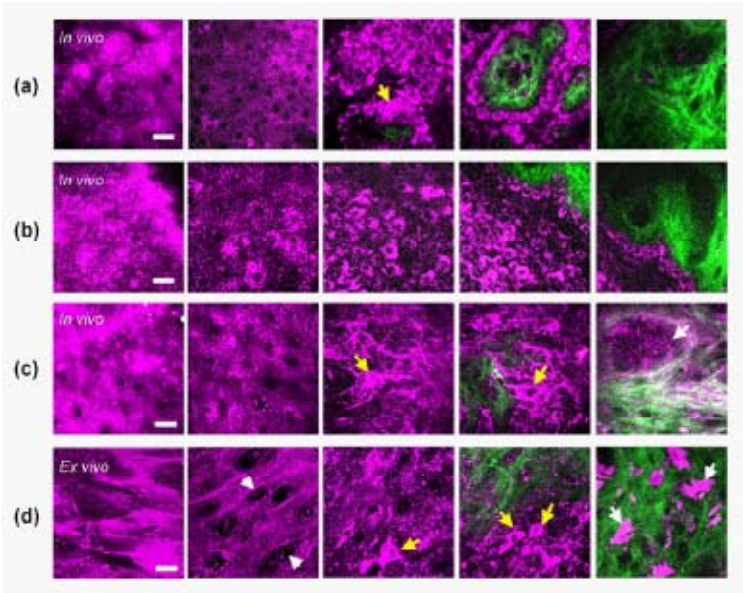
Version 1 and 2 are the implementation of the HGM system for in vivo imaging. The rotatable system is adapted from a commercial scanning system (FV300).



Version 1　　Version 2

代表圖及中英文說明-2：

圖A: 色素性病灶在不同量測深度之倍頻影像，包括(a)痣, (b)脂溢性角化症, (c)基底細胞癌 以及(d)黑色素細胞癌。



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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. Sunscope®（經濟部學界科專委託計畫）
3. Lidopat® / Lidocap®（美時製藥合作）
4. 健保資料庫分析（歐陽彥正教授合作）
5. 遠距緊急救護監測－同步互聯醫療網：開發以緊急救護技術員為中心的移動式整合播放站（新北市消防局中長程計畫，送審中）

計畫名稱：遠距緊急救護監測－同步互聯醫療網：開發以緊急救護技術員為中心的移動式整合播放站
Interactive Telemedicine in Emergent Medical System: Emergent Medical Technician-Based Mobile Broadcasting Station
補助單位：新北市消防局中長程計畫（送審中）
計畫期間：2011 – 2013

本研究計畫將發展以緊急救護技術員（Emergency Medical Technician -EMT）為中心的無線救護通訊系統，有別於一般以救護車為資訊中心的方式。本計畫預計研發兩個模組以及一套軟體整合系統，兩模組分別為擁有3.5G無線發射功能之遠距離通訊裝置模組，另一模組為包含低耗電的藍牙（Bluetooth）4.0版本之近距離通訊裝置模組，整合系統則包括了患者影音資料庫的緊急救護資源整合平台，三部分所運用之技術如下所述：

1. 遠距離通訊裝置模組（Long Range Transmission Module- LRTM）

本模組預計採用ARM Cortex A9 1.2GHZ處理器，內含3.5G及Bluetooth Module並且提供2組Audio/Video接點以及一組數位接點給予微型攝影機以及微型麥克風使用，生理量測儀器間的通訊方式將依ISO/IEEE 11073（X73）所訂定的規格標準來實作，傳輸介面則採用藍牙無線傳輸；遠距離通訊裝置模組將所收到的影音訊號壓縮後，以3.5G無線網路發送至緊急救護資源整合平台進行後續處理。

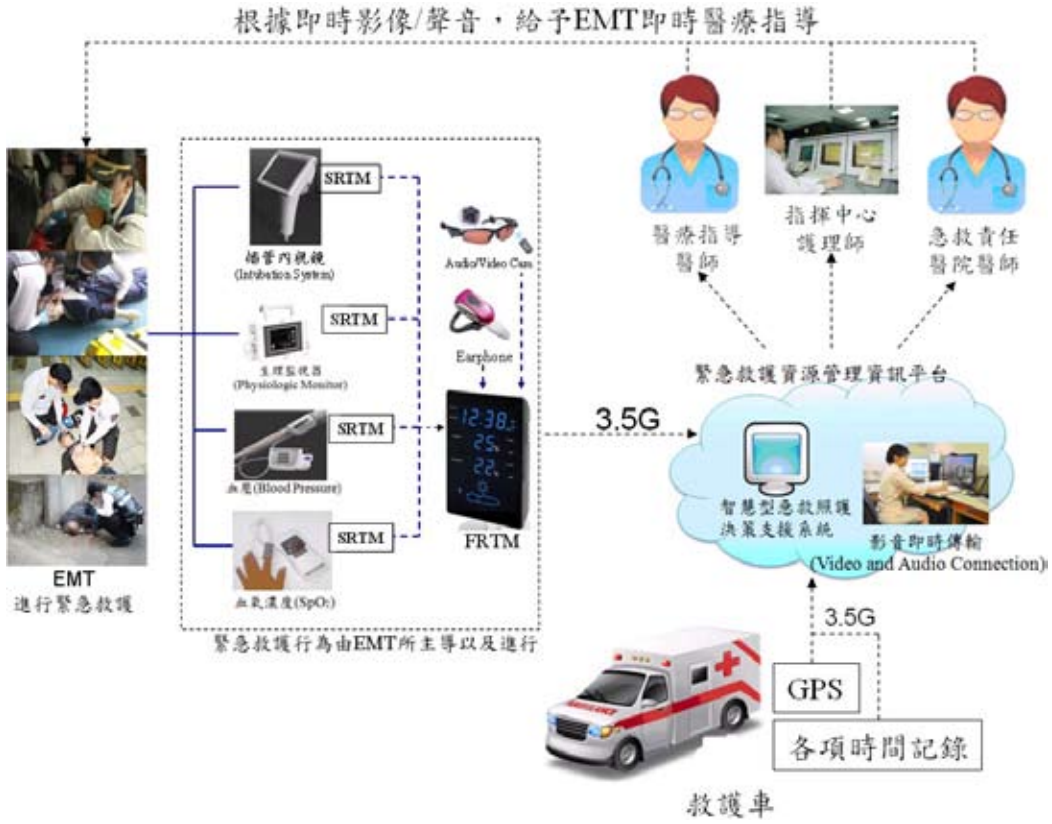
2. 近距離通訊裝置模組（Short Range Transmission Module- SRTM）

本模組主要以低功率藍牙通訊協定作為各項儀器與遠距離通訊裝置模組溝通之橋樑，此模組主要將急救相關設備如攜帶式生理監視器、血氧濃度劑、插管型內視鏡、搜救型內視鏡等不具有無線傳輸功能的醫療裝置無線橋接至遠距離通訊裝置模組。

3. 緊急救護資源整合平台

救護資源整合平台則為遠距資訊的匯集站，此整合平台接受由各遠距離通訊裝置模組所發送出的IP Based訊號後，開始進行資料儲存以及發送，生理相關儀器資料依照IEEE 11073規範進行儲存，影音則儲存由遠距離通訊模組發送之H264之串流資訊，不另外進行壓縮；整合資訊的發送則透過網頁進行，僅持有相關權限者，如指揮中心護理師、醫療指導醫師、相關醫療人員等，可進入觀看、交互對談模式。

代表圖及中英文說明：



本系統以ARM架構的處理器為中心，使用3.5G行動通訊網路連結相關醫療設備，如帽沿攝影機、隱藏式麥克風、藍牙耳機、氣管插管內視鏡、血氧濃度器、攜帶型生理監視器等急救器材，即時將病患的生命徵象數值(vital sign)傳遞至緊急救護資源整合平台，使得相關醫療專業人員，如救護指揮中心的護理師以及地方急救責任醫院的醫師均可即時得知病患的狀況，並及對EMT給予即時的醫療指導，有效的促進EMT、救護指揮中心之派遣員、護理師及醫療指導醫師、地方急救責任醫院的溝通與資源整合，即時的經由EMT進行最恰當的處置，給予病患必要且適當的照護，提高救護的品質與病患的存活率，以EMT為資訊中心的資訊連結架構圖如圖所示。

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Micro/Nano Analytical Technologies & Systems Lab.

本實驗室由田維誠教授成立於2009年。本實驗室的研究方向為微奈米分析技術及系統在生醫檢測，醫療技術，及生物化學應用之研究。本實驗室的研究重心在微奈米機電、微奈米流體力學及有關元件系統整合、封裝及可靠性之研究，並希望與CMOS製程相結合。

未來將以微奈米分析技術及系統儀器出發，希望能大幅改進臨床前、臨床及體外診斷之準確性、速度、成本及使用方便性。

My research interests are on biological, chemical, and medical applications of micro & nano technologies with the focus on the CMOS compatible integration, packaging, and reliability of the micro/nano devices and systems. The future goal is to improve the accuracy, speed, cost, and ease-of-use of pre-clinical, clinical, and in vitro diagnostics by using micro/nano-enabled systems or instrumentations.

主要研究領域 Major Research Areas

微奈米分析及流體集成技術、微奈米機電系統儀器在生化醫療之應用

Micro and nano analytical & fluidic integrated technologies, MEMS/NEMS enabled instrumentation for biological, chemical and medical applications.

研究計畫 Research Projects

1. 人體呼吸氣體分析儀關鍵元件之研製與開發
   Research and Development of Key Components for Human Breath Analyzer
2. 混合式CMOS相容壓力微感測器陣列在非侵入血流監控之應用
   Mixed Mode CMOS-based Pressure Microsensor Arrays for Non-Invasive Hemodynamic Monitoring

計畫名稱：混合式 CMOS 相容壓力微感測器陣列在非侵入血流監控之應用
補助單位：行政院國家科學委員會
計畫期間：2010/08/01-2013/07/31

本三年期整合型計畫目標在於設計並且開發一整合型醫療系統。此醫療系統可以自動校準，並且以非侵入性的器材量測病患的脈波傳導速度並求得動脈血液流速。此參數是在近年來對於心血管疾病的診斷及治療相當程度的指標。本整合型醫療系統可以長時間並持續觀察病人的動脈血液流速，並藉此了解病人的身體狀況。

本子計畫將會提出數種以 CIC/TSMC CMOS MEMS製程為基礎之微型壓力感測器，輔以適當之後製程(例如聚焦離子束奈米技術)，以陣列之型式提高脈波波型解析度。計畫初期將提出數種與 CMOS MEMS製程相容之新型微型壓力感測器設計（單一式），並且進行理論模型建構及後製程研發。接著將混合不同感測原理於單一感測器(混合式)，提供數種不同之物理量（如電容、電壓或頻率）來與壓力作關係，藉以提供一高效能之量測。

計畫中期將針對所研製之微型感測器陣列作設計實驗(DOE)以系統化之方法作析，期能以最佳化之設計展現其強大感測效能，並與下游端電路設計及信號處理子計畫相結合，以演算法分析以壓力感測陣列量取的人體皮膚壓力信號。計畫後期將會藉由廣泛的人體試驗蒐集實驗數據，並且根據實驗結果改進微型壓力感測器陣列之效能，特別是在封裝及與人體接觸之設計，希望能實現醫療器材產品化的初步整合。

Project title: Mixed Mode CMOS-based Pressure Microsensor Arrays for Non-Invasive Hemodynamic Monitoring
Supported by: National Science Council
Project period: 2010/08/01-2013/07/31

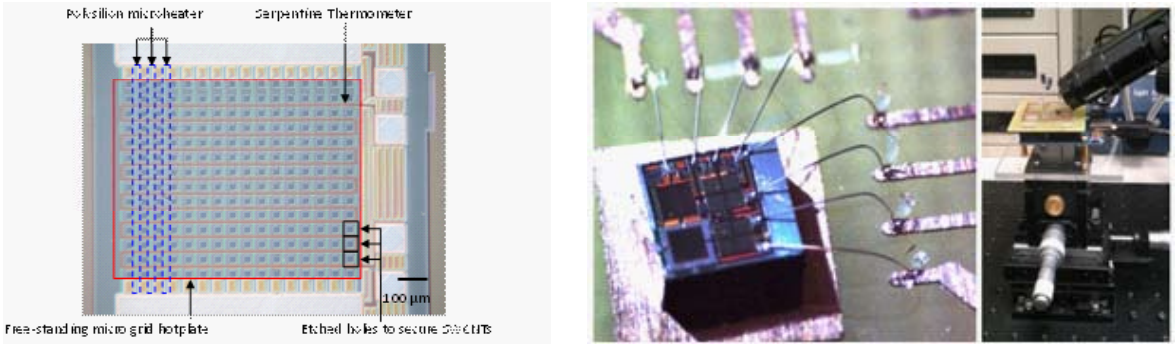
An integrated medical equipment system is proposed in this 3-year integrated project. This proposed medical equipment can be automatically calibrated to measure the patient's arterial blood flow rate based on the pulse pressure and pulse wave velocity (PWV). The blood flow rate is an important indicator in the treatments of cardiovascular diseases nowadays. The proposed integrated medical equipment can monitor the blood flow of the patients continuously for a long period, and the condition of the patients can be evaluated by analyzing the collected data.

The main research goal for this subproject is to develop the sensor array for this integrated medical equipment. This high-resolution sensor array will be highly sensitive, robust, and accurate for precise pulse pressure measurement required to obtain accurate blood flow rate.

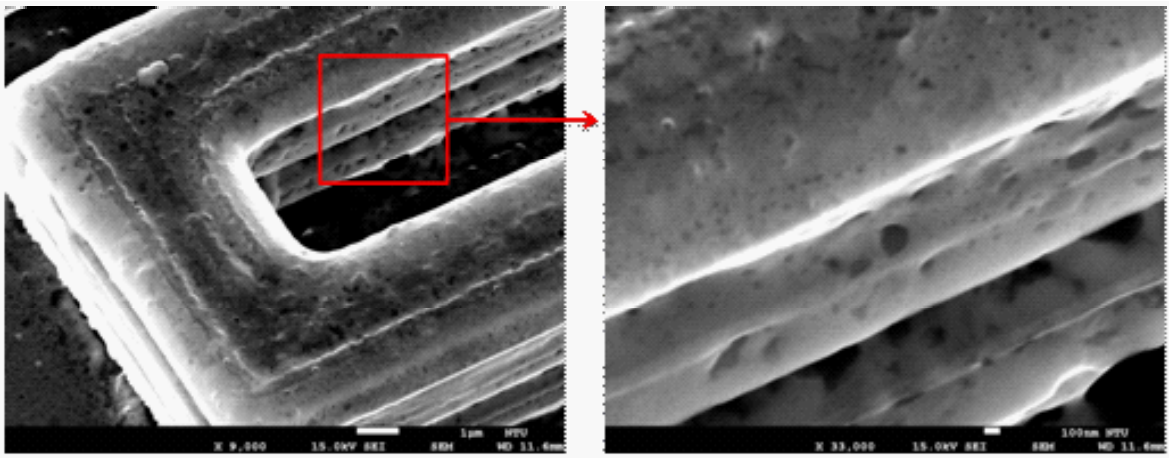
Several micro-electro-mechanical systems (MEMS)-based pressure sensors, which are compatible with CMOS MEMS process, will be proposed in this subproject. Few post-processes, e.g. Focused Ion Beam (FIB) nano technology, will be designed and implemented after CMOS MEMS process to complete our sensors' fabrication. We propose to combine various transduction mechanisms (e.g. resistance change, capacitance change, voltage change, or frequency change) into one sensor to provide an orthogonal sensing platform to further enhance the sensitivity, robustness, and accuracy of the pulse pressure measurement. These mixed mode sensor arrays will be used to better increase the spatial resolution of the system to get a better mapping of pulse wave pressure.

In the beginning of this project, several CMOS MEMS-based pressure sensors, with numerous sensing and driving mechanisms, will be designed and modeled. The optimal designs (both single mode and mixed mode) will be chosen based on a systematical evaluation (tradeoff matrix). Next, these optimal designs, in parallel with the development of interface circuits and signal process & algorithms, will be submitted to CMOS MEMS line. With properly post-treatments after receiving the CMOS MEMS chips, all these chips with different designs will be tested and evaluated based on the design of experiments (DOE). These single and mixed mode sensors will be evaluated individually to get device characteristics and also be tested to obtain the pulse pressure from human skin. The final part of this project is to work with other sub-teams to implement a prototype to collect the human clinical data. Based on the developed human hemodynamic model and initial collected clinical data, enhancement and improvement of the sensor array implementation, such as sensor array packaging, human-sensor array interface, or different designs, will be performed to obtain a working prototype for future commercialization.

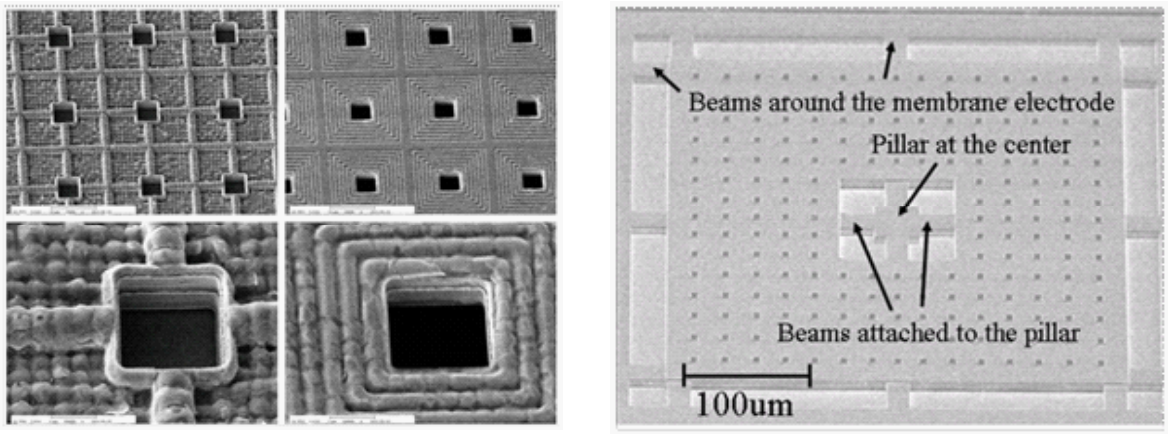
代表圖說明：



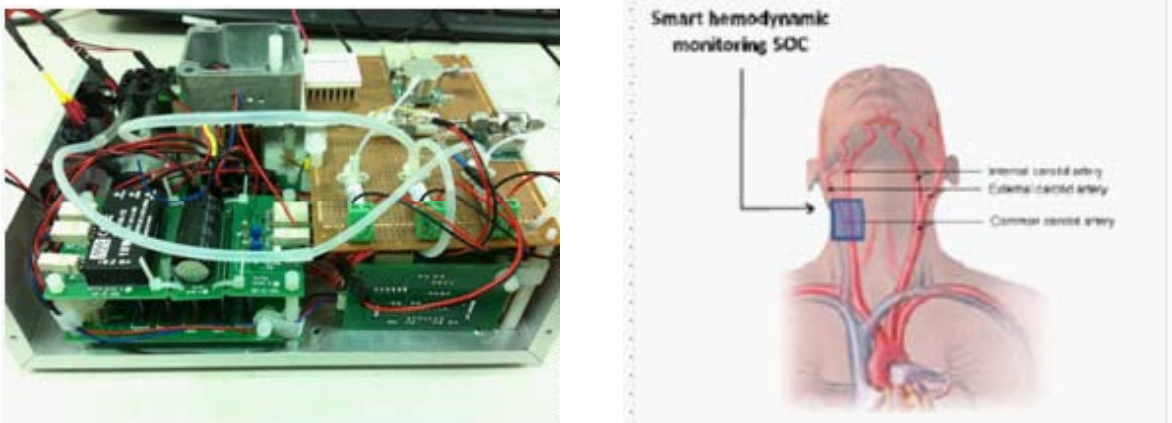
Left: CMOS MEMS sensing platform; Right: Packaged CMOS-based sensors



Left: Microstructures for sensor; Right: Nano-Au material coated on the sidewall



Left: MEMS membrane structures; Right: CMOS MEMS tactile sensors



Left: Assembled system of micro gas analyzer for breath analysis; Right: Concept of CMOS MEMS tactile sensors for blood monitoring

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Digital Signal Processing Lab.

主要研究領域 Major Research Areas

一、生醫訊號處理

1. 超音波：對比劑的研究和利用，計算經由對比劑回波訊號中的諧波成分來估測理論中組織的衰減係數，其中必須利用周期譜的方式求得訊號的功率頻譜密度。設計一個可用在體內實驗的適應性演算法，用以估測體內組織的衰減係數。並且，對此法做誤差分析以得知應用此方法估測衰減係數與理論值的差距。利用動物實驗，將不同程度的肝臟疾病應用超音波對比劑在肝組織的分佈情形藉以判斷肝病。
2. 胎兒心電圖：胎兒心電圖的觀察有實際上的困難，因為胎兒位於母體之內，皮膚上的電極所紀錄的信號中，同時存在兩個本質上相同的來源，為母親和胎兒的心臟。尤其母親心電圖的信號強度遠大於胎兒心電圖，更增加了處理上的困難。另外，因為胎兒心電圖十分微弱，其他生理現象所產生的干擾或是量測上造成的雜訊，相對於胎兒心電圖的影響也會十分顯著。本研究著力於胎兒心電圖的信號取得。
3. 腦波

二、水下通訊

水聲通訊和無線電通訊主要有二個最大的差異點，一是水聲通道有非常長的多重路徑延遲，範圍可涵蓋十到一百多個符號(symbols)，另一個是通道時變的速度。對於基於通道估測的等化器來說，通道估測是決定其效能的表現的最重要因素。

- Diagnostic Medical Ultrasound: Ultrasound Contrast Imaging, Ultrasonic Liver Imaging
- Bio-signal Processing : Fetal ECG extraction, EEG Signal Analysis
- Underwater Acoustic Communication: UWA Channel Estimation, Tracking and Equalization

研究計畫 Research Projects

1. 超音波對比劑於組織參數估測之應用(1)
2. 超音波對比劑於組織參數估測之應用(2)
3. 一個用於二次諧波脈衝壓縮成像之多頻合成技術

計畫名稱：超音波對比劑於組織參數估測之運用
補助單位：行政院國家科學委員會

對於生物組織的超音波反應特性而言，衰減係數是個重要的參數。一般估測組織的衰減係數大略可分為利用背散射訊號估測以及穿透訊號估測兩種。其中，背散射訊號的估測方式可適合於大部分的應用。但是卻有散射成份干擾的困難。應用穿透訊號的方式是較為適合於估測衰減係數，但是由於必須在組織兩端皆放上探頭，因此只適合體外實驗用。近年來由於超音波對比劑的的技術成熟，使得我們可以發展一個新方法，使用對比劑來估測體內組織的衰減係數。由於對比劑有高度非線性的特性，因此我們藉由使用多組頻率激發組織之後的對比劑，我們可應用其所產生的諧波訊號達到應用穿透訊號估測組織衰減係數的目的。除此之外，我們也應用對比劑在肝組織當中的分佈比率估測肝組織整體的健康程度。

在本計劃中，我們將研究分成三個部份來進行研究：（一）我們計算經由對比劑回波訊號中的諧波成分來估測理論中組織的衰減係數，其中必須利用周期譜的方式求得訊號的功率頻譜密度。（二）設計一個可用在體內實驗的適應性演算法，用以估測體內組織的衰減係數。並且，對此法做誤差分析以得知應用此方法估測衰減係數與理論值的差距。（三）利用動物實驗，將不同程度的肝臟疾病應用超音波對比劑在肝組織的分佈情形藉以判斷肝病。

Attenuation Coefficient (Att. Coef.) is an acoustic parameter for tissue characterization. Two major techniques for Att. Coef. Estimation are the backscattering and transmission methods. Backscattering method is suitable for general applications, but the speckle interference makes it inaccurate. Transmission method is more reliable, but it is suitable for peripheral organs only, due to the need of a separate transmitter. With the aid of contrast agent (microbubble), a new way to estimate the Att. Coef. of soft tissues is proposed, which is suitable for general applications . Since microbubble is a highly nonlinear object, Using the multiple frequencies generated by microbubbles behind the tissue, the Att. Coef. Can be estimated in transmission mode. Since the harmonics are generated by common microbubbles, their relative strengths can be predicted by theory and measured for Att. Coef. Estimation.

The research is divided into three parts. First, we use periodogram to estimate the power spectrum of echo signals and using the second harmonic component to estimate the theoretical Att. Coef. Secondly, we will develop an adaptive algorithm to estimate Att. Coef. Which is suitable for general application. Finally, we use agent distributed in different rates to estimate liver diseases.

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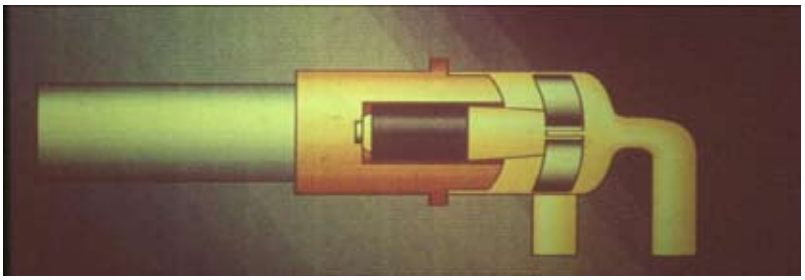
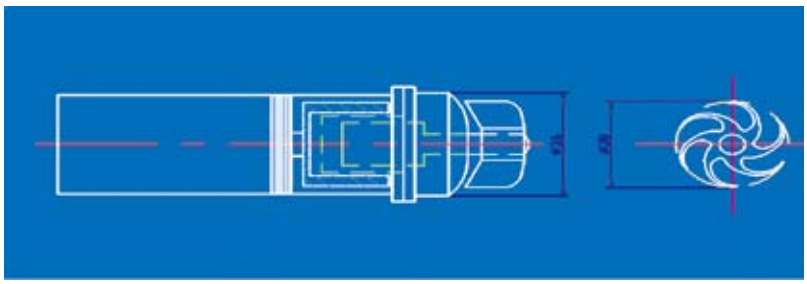
Professor, Graduate Institute of Biomedical Electronics and Bioinformatics/ Division of Cardiovascular Surgery, NationalTaiwanUniversity
Director, Heart Transplantation and Heart-Lung Transplantation, National Taiwan University Hospital

心臟輔助器實驗室
Ventricular Assist Device Lab.

自1993年我們就積極研究流線型離心幫浦做為心臟衰竭的輔助循環，可在100mmHg阻力下提供8 L/min的輔助。而利用電壓的改變而改變葉輪的轉速造成博動流。包含馬達的總重量只有110g，總長度只有7 cm，溶血系數只有0.020。此心臟輔助器擁有經濟部智慧財產局新型第一五四一O五號及新型第M323290號專利。目前我們持續研究小而美的心臟輔助器以供幼兒使用。

We started to develop our own centrifugal pump with streamlined design in impeller type in 1993. It can produce 8L/min output at a resistance of 100 mmHg. It can provide pulsatile flow by changing the rotating speed of the impeller periodically via introducing a square wave form voltage into the driving motor coil of the pump. Together with the generator, it weighs only 110 gm with a total length of 7 cm, and index of hemolysis of only 0.020. Now we keep on developing a smaller pump to treat the intractable heart failure for infants.





臺大一號心室輔助器

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主要研究領域 Major Research Areas

- 心臟外科包括冠狀動脈繞道手術、瓣膜手術、主動脈手術、心律不整手術、心臟衰竭手術等
- 血管外科包括胸主動脈瘤支架或手術、腹主動脈瘤支架或手術、周邊動脈阻塞重建手術、靜脈曲張手術、尿毒症血液透析之廔管手術等
- 心臟輔助循環包括葉克膜體外維生系統、心室輔助器等
- 移植手術包括心臟移植、心肺移植
- Cardiac Surgery：Coronary Artery Disease Surgery, Valvular Heart Disease Surgery, Aortic Surgery, Arrhythmia Surgery, Surgery for Heart Failure
- Vascular Surgery：EndoVascular Stent-grafting for Thoracic Aortic Aneurysm or Abdominal Aortic Aneurysm, Revascularization for Peripheral Arterial Occlusive Disease, Varicose Vein Surgery, Arteriovenous Fistula Creation
- Mechanical Circulatory Assist：Extracorporeal Membrane Oxygenation, Ventricular Assist Device
- Transplantation：Heart Transplantation, Heart-Lung Transplantation

研究計畫Research Projects

1. 人體心肺移植
   Heart-lung transplantation.
2. 一項為期24個月、多中心隨機分配、開放性、非劣性的研究，比較在兩個濃度控制的Certican併用降低劑量的Neoral對照3克的MMF併用標準劑量的Neoral於新接受心臟移植病患者的療效與安全性
   A 24-month, multicenter, randomized, open-label non-inferiority study of efficacy and safety comparing two exposures of concertration-controlled Certican with reduced Neoral versus 3.0g MMF with standard dose Neoral in de novo heart transplant recipients.
3. 骨髓間葉幹細胞於心肌再生的研究：評估不同製備方式評估蠶絲移植物對骨髓間葉幹細胞分化影響與動物實驗(1,2,3)
   Regenerating myocardial cells by using mesenchymal stem cell(MSC)- effect of different fabrication techniques of silk fibrion-based scaffolds on differentiation of MSC into myocardiocytes in vitro, and aminal study(1,2,3).
4. 運動處方對國人重大疾病的健康效益－臨床與代謝體指標的探討－「運動處方對於冠狀動脈繞道手術病患的健康效益：臨床與代謝體指標的探討(整合型計畫-子計畫四) (1/3,2/3,3/3)
   Discussion of the health benefits on exercise prescription of major disease – the benefits of exercise prescription for coronary bypass patient–discussion of clinical andmetabonomics
5. 評估接枝紅血球生成素(EPO)於具方向性蠶絲蛋白摻和玻尿酸薄膜釋放不同濃度之血管內皮細胞生長因子對人類羊水幹細胞(hAES)分化影響與心肌再生之動物實驗
   Effect of Erythropoietin (EPO) grafted in isotropic silk-fibroin/hyaluronic acid patch releasing vascular endothelial growth factor on differentiation of human amniotic epithelial stem cells (hAES) into cardiomyocytes and regeneration myocardium.
6. 新型玻尿酸水膠在心臟幹細胞治療的轉譯研究(整合型計畫-子計畫三) (1/2,2/2)
   Development of novel hyaluronan hydrogel for cardiac stem cell therapy — A translational approach.
7. 行冠狀動脈繞道術後病患症狀經驗與生活品質之縱向研究
   Symptom experience and QoL in CABG patients-A longitudinal study.
8. 一個前瞻性、隨機、活性對照藥、開放性試驗，於第三及第四期週邊動脈阻塞性疾病患者比較乳化液劑型前列腺素E1與環糊精劑型前列腺素E1之療效及安全性
   A prospective, randomized, active controlled, open-label study to compare the efficacy and safety of PGE1 emulsion and PGE1-CD in patients with stages III–IV of peripheral arterial occlusive disease (PAOD).

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Adjunct Associate Professor, Department of Medical Imaging, National Taiwan University Hospital
Adjunct Associate Professor, Graduate Institute of Clinical Medicine, National Taiwan University

臨床磁振影像實驗室
Clinical Magnetic Resonance Imaging Lab.

本實驗室由吳文超教授成立於2010年，主要從事磁共振影像技術開發與臨床應用之相關研究，目前以微灌流影像與功能性影像為研究重點，並與台大醫院影像醫學部、核子醫學部合作，建立多模技術平台，提高於臨床診斷及預後的準確性。

Professor Wen-Chau Wu founded the Laboratory of Clinical Magnetic Resonance Imaging in the summer of 2010. The main research focus has been placed on the technical development and clinical applications of magnetic resonance imaging (MRI). Currently, we are conducting three NSC funded projects using advanced MRI techniques, including multi-modal functional MRI, perfusion MRI (arterial spin labeling, dynamic susceptibility contrast enhanced imaging, and dynamic contrast enhanced imaging), and diffusion-weighted MRI. We closely collaborate with the Departments of Medical Imaging and Nuclear Medicine in National Taiwan University Hospital to build up a multi-modal framework to improve the accuracy of diagnosis and prognosis in various diseases.

主要研究領域 Major Research Areas

微灌流磁共振影像、功能性磁共振影像、醫學影像處理、生醫信號分析
Perfusion Magnetic Resonance Imaging (Arterial Spin Labeling and Bolus Tracking), Functional Magnetic Resonance Imaging, Medical Image Processing, Biomedical Signal Analysis

研究計畫 Research Projects

1. 速度選擇動脈氫質子標記法微灌流磁振造影
   Velocity-selective arterial spin labeling perfusion magnetic resonance imaging
2. 四肢肌肉之功能性磁振造影
   Functional magnetic resonance imaging in extremity muscles
3. 使用動態對比劑增強及動脈標定磁振造影技術定量腎臟血流灌注並評估臨床應用之可行性
   Clinical feasibility of dynamic contrast enhanced MRI and arterial spin labeling MRI in quantitative assessment of renal perfusion

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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 Mediato r 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

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發表論文 Publications

趙坤茂教授 Kun-Mao Chao, Professor

※學術期刊論文 Journal articles & book chapters

1. Chen, K.-Y. and Chao, K.-M., "A Fully Compressed Algorithm for Computing the Edit Distance of Run-Length Encoded Strings," Algorithmica, accepted. [SCI] , 2012
2. Lee, C.-H., Lee, M.-C., Lin, H.-H., Shu, C.-C., Wang, J.-Y., Lee, L.-N., and Chao, K.-M.., "Pulmonary Tuberculosis and Delay in Anti-tuberculous Treatment are Important Risk Factors for Chronic Obstructive Pulmonary Disease" PLoS ONE, accepted. [SCI] , 2012
3. Chang, C.-J. and Chao, K.-M., "Efficient Algorithms for Local Ranking," Information Processing Letters, accepted. [SCI, EI] , 2012
4. Chen, K.-Y., Hsu, P.-H., and Chao, K.-M., "Efficient Retrieval of Approximate Palindromes in a Run-Length Encoded String," Theoretical Computer Science, accepted. [SCI] , 2012
5. Hsu, P.-H., Chen, K.-Y., and Chao, K.-M., "Finding All Approximate Gapped Palindromes," International Journal of Foundations of Computer Science, accepted. (An invited paper for the special issue of IJFCS for ISAAC 2009) [SCI] , 2012
6. Huang, Y.-T., Chang, C.-J., and Chao, K.-M., "The Extent of Linkage Disequilibrium and Computational Challenges of Single Nucleotide Polymorphisms in Genome-Wide Association Studies," Current Drug Metabolism, 12(5): 498-506. [SCI] ., 2011
7. Chen, M.-H., Yang, W.-L. R., Lin, K.-T., Liu, C.-H., Liu, Y.-W., Huang, K.-W., Chang, M.-H., Lai, J.-M., Chun-Nan Hsu, C.-N., Chao, K.-M., Kao, C.-Y, and Huang, C.-Y. F., "Gene Expression-Based Chemical Genomics Identifies Potential Therapeutic Drugs in Hepatocellular Carcinoma," PLoS ONE, 6(11): e27186. [SCI] , 2011
8. Lee, C.-H., Wu, Y.-K., Wang, J.-Y., Lan, C.-C., Lee, C.-Y., Hsu, K.-Y., Chao, K.-M., Chang, H., "Influence of Pressure Control Levels on the Pulse Pressure Variations," Shock, 36(6): 628-632. [SCI] , 2011
9. Lin, R.-R., Chang, Y.-H. and Chao, K.-M., "Improving the Performance of Identifying Contributors for XML Keyword Search," ACM SIGMOD Record, 40(1): 5-10. [SCI] , 2011
10. Luo, C.-W., Liu, H.-F., Chen, P.-A., and Chao, K.-M., "Minkowski Sum Selectionand Finding," International Journal of Computational Geometry and Applications, 21(3): 283-311. (An invited paper for the special issue of IJCGA for ISAAC 2008) [SCI] , 2011
11. Luo, C.-W., Chen, M.-C., Chen, Y.-C., Yang, R.W.-L., Liu, H.-F., and Chao, K.-M., "Linear-Time Algorithms for the Multiple Gene Duplication Problems," IEEE/ACM Transactions on Computational Biology and Bioinformatics, 8(1): 260-265. [SCI] , 2011
12. Chen, Y.-C. and Chao, K.-M., "On the Generalized Constrained Longest Common Subsequence Problems," Journal of Combinatorial Optimizations, 21(3): 383-392. [SCI] , 2011
13. Bernt, M., Chen, K.-Y., Chen, M.-C., Chu, A.-C., Merkle, D., Wang, H.-L., Chao, K.-M., and Middendorf, M., "Finding All Sorting Tandem Duplication Random Loss Operations," Journal of Discrete Algorithms, 9(1): 32-48. , 2011
14. Chen, K.-Y., Hsu, P.-H., and Chao, K.-M., "Hardness of Comparing Two Run-Length Encoded Strings," Journal of Complexity, 26(4): 364-374. [SCI] , 2010
15. Chu, A.-C., Wu, B.Y., Wang, H.-L., and Chao, K.-M., "A Tight Bound on the Min-Ratio Edge-Partitioning Problem of a Tree," Discrete Applied Mathematics, 158(14): 1471-1478. [SCI] ., 2010

※研討會論文 Conference & proceeding papers

1. Chao, K.-M., Chu, A.-C., Jansson, J., Lemence, R., and Mancheron, A., 2012, "Asymptotic Limits of a New Type of Maximization Recurrence with an Application to Bioinformatics," The 9th Annual Conference on Theory and Applications of Models of Computation (TAMC 2012), Lecture Notes in Computer Science, Beijing, China.
2. Lin, R.-R., Chang, Y.-H. and Chao, K.-M., 2011, "Identifying Relevant Matches with NOT Semantics over XML Documents," DASFAA 2011, Lecture Notes in Computer Science, Hong Kong.
3. Lin, R.-R., Chang, Y.-H. and Chao, K.-M., 2010, "Faster Algorithms for Searching Relevant Matches in XML Databases," The 21st International Conference on Database and Expert Systems Applications (DEXA 2010), Lecture Notes in Computer Science, Bilbao, Spain.
4. Chen, K.-Y. and Chao, K.-M., 2010, "A Fully Compressed Algorithm for Computing the Edit Distance of Run-Length Encoded Strings," The 18th Annual European Symposium on Algorithms (ESA 2010), Lecture Notes in Computer Science, Liverpool, United Kingdom.

※專書 Books

1. Chao, K.-M., 2011, "Pattern Identification in a Haplotype Block," Chapter 2 of the book "Bioinformatics for Biologists," edited by Pavel Pevzner and Ron Shamir, Cambridge University Press, UK.

莊曜宇教授 Eric Y. Chuang, Professor

※學術期刊論文 Journal articles & book chapters

1. Hsien-Chi Kuo, Po-Yu Lin, Ting-Chiun Chung, Chin-Mei Chao, Liang-Chuan Lai, Mong-Hsun Tsai, and EY Chuang, "Database of CpG islands and analytical tools for identifying comprehensive Methylation profiles in cancer cells," Journal of Computational Biology, 18(8), 1013-1017, 2011
2. Pei-Chun Chen, Yen-Ching Chen, Liang-Chuan Lai, Mong-Hsun Tsai, Shin-Kuang Chen, Pei-Wen Yang, Yung-Chie Lee, Chuhsing K. Hsiao, Jang-Ming Lee, and EY Chuang, "The Use Of Germline Polymorphisms In Predicting Concurrent Chemoradiotherapy Response In Esophageal Cancer," Int. J. Radiation Oncology Biol. Phys, 2011
3. LC Lai, YY Su, KC Chen, MH Tsai, YP Sher, TP Lu, CY Lee, and EY Chuang, "Down-Regulation of NDRG1 Promotes Migration of Cancer Cells during Reoxygenation," PLoS One, 6(8), e24375, 2011
4. TP Lu, LC Lai, MH Tsai, PC Chen, CP Hsu, JM Lee, CK Hsiao, EY Chuang, "Integrated analyses of copy number variations and gene expression in lung adenocarcinoma," PLoS One, 6(9), e24829, 2011
5. FH Hsu, HI Chen, MH Tsai, LC Lai, CC Huang, SH Tu, EY Chuang, Y Chen, " A model-based circular binary segmentation algorithm for the analysis of array CGH data.," BMC Res Notes, 4(1), 394, 2011
6. SY Lin, SC Hsieh, YC Lin, CN Lee, MH Tsai, LC Lai, EY Chuang, PC Chen, CC Hung, LY Chen, WS Hsieh, DM Niu, YN Su, HN Ho, "A whole genome methylation analysis of systemic lupus erythematosus: hypomethylation of the IL10 and IL1R2 promoters is associated with disease activity," Genes Immun, 2011
7. H Chen, TH Chen, TF Tseng, JT Lu, CC Kuo, SC Fu, WJ Lee, YF Tsai, YY Huang, EY Chuang, YJ Hwang, CK Sun, "High-sensitivity in vivo THz transmission imaging of early human breast cancer in a subcutaneous xenograft mouse model," Opt Express, 19(22), 21552-62, 2011
8. LH Chen, WH Kuo, MH Tsai, PC Chen, CK Hsiao, EY Chuang, LY Chang, FJ Hsieh, LC Lai, KJ Chang, "Identification of prognostic genes for recurrent risk prediction in triple negative breast cancer patients in Taiwan," PLoS One, 6(11), e28222, 2011
9. Tzu-Pin Lu, Liang-Chuan Lai, Be-i Lin, Li-Han Chen, Tzuhung Hsiao, Howard L. Liber, John Cook, James B. Mitchell, Mong-Hsun Tsai and EY. Chuang, "Distinct Signaling Pathways After Higher or Lower Doses of Radiation in Three Closely Related Human Lymphoblast Cell Lines,"

Int. J. Radiation Oncology Biol. Phys, 76, No. 1, pp. 212–219., 2010

10. Tzu-Hung Hsiao, Chien-Hong Lin, Te-Tsui Lee, Ji-Yen Cheng, Pei-Kuen Wei, EY. Chuang, and Konan Peck, "Verifying expressed transcript variants by detecting and assembling stretches of consecutive exons," Nucleic Acids Research,, 38(20), e187, 2010

11. Tzu-Pin Lu, Mong-Hsun Tsai, Jang-Ming Lee, Chung-Ping Hsu, Pei-Chun Chen, Chung-Wu Lin, Jin-Yuan Shih, Pan-Chyr Yang, Chuhsing Kate Hsiao, Liang-Chuan Lai, and EY. Chuang, "Identification of a Novel Biomarker, SEMA5A, for Non–Small Cell Lung Carcinoma in Nonsmoking Women," Cancer Epidemiology, Biomarkers & Prevention, 19, 2590-2597, 2010

鍾孝文教授 Hsiao-Wen Chung, Professor

※學術期刊論文 Journal articles & book chapters

1. Kao HW, Chuo NY, Hsueh CJ, Chou MC, Chung HW, Liou M, Chiang SW, Chen SY, Juan CJ, Huang GS, Chen CY(*)," Delayed Parkinsonism after carbon monoxide intoxication: evaluation of the substantia nigra with inversion-recovery MR imaging",. Radiology 2012, accepted.
2. Peng HH, Huang TY(*), Wang FN, Chung HW, " Flow-gated radial phase-contrast imaging in the presence of weak flow. International Journal of Cardiovascular Imaging 2012, accepted.
3. Lai PH(*), Chang HC, Chuang TC, Chung HW, Hsu SS, Li JY, Weng MJ, Fu JH, Wang PC, Li SC, Pan HB. ," Susceptibility-weighted imaging in patients with pyogenic brain abscesses at 1.5T: characteristics of the abscess capsule. ",. American Journal of Neuroradiology 2012;33:910-914 (highlighted as Editor's Choice).
4. Hsu JS, Tsai SY, Wu MT, Chung HW, Lin YR(*).,"Fast dynamic contrast-enhanced lung MR imaging using k-t BLAST: a spatiotemporal perspective. ",. Magnetic Resonance in Medicine 2012;67:786-792.
5. Liu HS, Chou MC, Chung HW, Chuo NY, Chiang SW, Wang CY, Juan CJ, Gao HW, Huang GS, Chen CY(*).," Potential long-term effects on the basal ganglia-thalamocortical circuit in MDMA (Ecstasy) users: a proton MRS and diffusion tensor imaging study. ",.Radiology 2011;260:531-540.
6. Chung HW, Chung HW, Chen CY, Chou MC(*).,"Diffusion tensor imaging with cerebrospinal fluid suppression and signal-to-noise preservation using acquisition combining fluid-attenuated inversion recovery and conventional imaging: comparison of fiber tracking. ",. European Journal of Radiology 2011;79:113-117.
7. Liou ST, Witzel T, Numenmaa A, Chang WT, Tsai WK, Kuo WJ, Chung HW, Lin FH(*).," Functional magnetic resonance inverse imaging of human visuomotor systems using eigenspace linear constraint minimum amplitude (eLCMA) beamformer. ",. Neuroimage 2011;55:87-100.
8. Chung HW, Chou MC, Chen CY(*).,"Principles and limitations of computational algorithms in clinical diffusion tensor MR tractography (invited review). ",. American Journal of Neuroradiology 2011;32:3-13.
9. Wang CY, Chung HW, Cho NY, Liu HS, Chou MC, Gao HW, Juan CJ, Lee MS, Huang GS, Chen CY(*).," Idiopathic growth hormone deficiency in the morphologically normal pituitary gland is associated with perfusion delay. ",. Radiology 2011;258:213-221.
10. Peng HH, Bauer S, Huang TY, Chung HW, Hennig J, Jung B, Markl M. ," Optimized parallel imaging for dynamic PC-MRI with multi-directional velocity encoding. ",. Magnetic Resonance in Medicine 2010;64:472-480.
11. Chuang TC, Wu MT, Huang TY, Lin YR, Tsai SY, Chang HC, Chung HW,". Stimulated echo induced misestimates on diffusion tensor indices and its remedy. ",.Journal of Magnetic Resonance Imaging 2010;31:1522-1529.
12. Chou MC, Tzeng WS, Chung HW, Wang CY, Liu HS, Juan CJ, Lo CP, Hsueh CJ, Chen CY. ," T2-enhanced tensor diffusion trace-weighted image in the detection of hyper-acute cerebral infarction: comparison with isotropic diffusion-weighted image. ",.European Journal of Radiology 2010;74:e89-e94.
13. Lin CC, Shen WC, Lo YC, Liu YJ, Yu TC, Chen IH, Chung HW ," Recurrent pain after percutaneous vertebroplasty. ",.American Journal of Roentgenology 2010;194:1323-1329.

14. Chao TC, Chung HW, Hoge WS, Madore B. ," A 2D MTF approach to evaluate and guide dynamic imaging developments. ",.Magnetic Resonance in Medicine 2010;63:407-418.

15. Huang GS, Lee HS, Chou MC, Shih YY, Tsai PH, Lin MH, Lin CY, Lee CH, Chung HW, "Quantitative MR T2 measurement of articular cartilage to assess the treatment effect of intra-articular hyaluronic acid injection on experimental osteoarthritis induced by ACLX. ",.Osteoarthritis and Cartilage 2010;18:54-60.

※研討會論文 Conference & proceeding papers

1. Chang HC, Chen NK, Juan CJ, Chuang TC, Ko CW, Chung HW,"Free breathing liver DWI using PROPELLER-DW-EPI with inherent reductions of geometric distortion and motion artifacts at 1.5T",. International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #261, Melbourne, Australia. (2012)

2. Tsai PH, Chiang SW, Chang YC, Wang CY, Chou MC, Chung HW, Huang GS ,"Aging effect on zonal and sex differences of human meniscus investigated by MR T2 measurements",. International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #1399, Melbourne, Australia. (2012)

3. Lin JM, Chuang TC, Wu WC, Chung HW, Tsai SY ,"Elimination of frequency-modulated sideband artifacts for in vivo non-water suppression MRS",. International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #1742, Melbourne, Australia. (2012)

4. Wu PH, Chung HW, Wu ML, Chuang TC, Chao TC ,"Brain fMRI with dual echo steady-state (DESS) imaging: preliminary findings on signal behavior and flip-angle dependency",. International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #2048, Melbourne, Australia. (2012)

5. Chu ML, Chung HW, Lin YR, Chao TC," Spatiotemporal acceleration of dynamic MR imaging without training data: prior-data-driven k-t PCA",.International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #2246, Melbourne, Australia. (2012)

6. Chu ML, Tsai PH, Chung HW, Peng HH, Ko CW ,"On non-Cartesian reconstruction by prior-data-driven k-t PCA",. International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #2247, Melbourne, Australia. (2012)

7. Chu ML, Hsu JS, Chung HW, Tsai SY, Lin YR ," Reconstruction of accelerated dynamic contrast-enhanced lung MR imaging using phase-correlation motion estimation and motion compensation",. International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #2281, Melbourne, Australia. (2012)

8. Chang HC, Chen NK, Chuang TC, Juan CJ, Wu ML, Chung HW ,"PROPELLER-EPI improved by 2D phase cycled reconstruction",. International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #2447, Melbourne, Australia. (2012)

9. Wu PH, Chung HW, Chen NK ,"Accurate B0 mapping with an adaptive algorithm integrating KESA, PRELUDE, and time-domain phase unwrapping",.International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #2506, Melbourne, Australia. (2012)

10. Lin JM, Chuang TC, Chang HC, Wu WC, Chung HW ,"An inexpensive iterative reconstruction for under-sampled PROPELLER MRI",. International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #2537, Melbourne, Australia. (2012)

11. Lin CC, Shen WC, Ho YJ, Tsai PP, Lo YC, Lin CW, Wu CY, Chang HC, Chung HW, Shyu WC, Lin SZ ," Longitudinal perfusion change after intracranial stem cell implantation in chronic stroke patients",. International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #3094, Melbourne, Australia. (2012)

12. Chiu SC, Juan CJ, Chung HW, Cheng CC, Chang HC, Chen CY, Huang GS ," A method of reducing fat-caused bias in DCE-MRI perfusion measurement",. International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #3527, Melbourne, Australia. (2012)

13. Wu YY, Tang YW, Peng HH, Ko CW, Chung HW, TY Huang ,"Contributions of in-plane CSF flow to the derivation of intracranial compliance: a three-direction cine phase-contrast flow study",. International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #3679, Melbourne, Australia. (2012)

14. Cheng CC, Chang HC, Panych L, Juan CJ, Chao TC, Chung HW ,"Simultaneous fat-water separated imaging using dual spatial-spectral RF pulses", International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #4168, Melbourne, Australia. (2012)

15. Chiu SC, Chang HC, Chuang TC, Wang FN, Chung HW ," Restoration of within-FOV aliasing in Propeller MRI using kt-Blast", International Society of Magnetic Resonance in Medicine, 20th Annual Meeting, #4254, Melbourne, Australia. (2012)

16. Tsai PH, Li C, Magland J, Huang TY, Wehrli F, Chung HW ,"Demonstration of meniscal fiber structure in vivo by radial imaging with minimal phase excitation and adiabatic fat suppression pulses at high field", International Society of Magnetic Resonance in Medicine,

19th Annual Meeting, #1115, Montreal, Canada. (2011)

17. Tsai PH, Cheng CC, Lin MH, Lin CY, Lee HS, Chung HW, Huang GS,"Perfusion measurements of subchondral bone in patellofemoral joint of rats with experimental OA model", International Society of Magnetic Resonance in Medicine, 19th Annual Meeting, #1134, Montreal, Canada. (2011)

18. Chang HC, Chao TC, Liu YJ, Shao KF, Cheng CC, Lin CC, Chung HW ," High resolution multiple slice composite inner volume excitation echo planar diffusion weighted imaging", International Society of Magnetic Resonance in Medicine, 19th Annual Meeting, #1952, Montreal, Canada. (2011)

19. Juan CJ, Cheng CC, Chung HW, Jen YM, Chang HC, Chiu SC, Chen CY, Hsueh CJ, Lin YS, Huang GS ,"Temporal evolution of the irradiated parotid glands: volume and ADC value", International Society of Magnetic Resonance in Medicine, 19th Annual Meeting, #2441, Montreal, Canada. (2011)

20. Cheng CC, Juan CJ, Chung HW, Jen YM, Chang HC, Chiu SC, Chen CY, Hsueh CJ, Lin YS, Huang GS ," Probing the radiation-induced changes of extravascular extracellular space of parotid glands using DCE and DW MRI", International Society of Magnetic Resonance in Medicine, 19th Annual Meeting, #2442, Montreal, Canada. (2011)

21. Cheng CC, Juan CJ, Chung HW, Jen YM, Chang HC, Chiu SC, Chen CY, Hsueh CJ, Lin YS, Huang GS ," Volume shrinkage, perfusion and diffusion alterations of irradiated parotid glands",International Society of Magnetic Resonance in Medicine, 19th Annual Meeting, #2445, Montreal, Canada. (2011)

22. Cheng YW, Chou MC, Cho NY, Chen CY, Chung HW,"Error evaluation and data correction for the outlier signals in Q-ball Imaging: comparison of orientation distribution function", International Society of Magnetic Resonance in Medicine, 19th Annual Meeting, #2684, Montreal, Canada. (2011)

23. Wu PH, Chen NK, Chung HW ,"Accurate B0 mapping with sparse TE stepping and k-space energy spectrum analysis", International Society of Magnetic Resonance in Medicine, 19th Annual Meeting, #2686, Montreal, Canada. (2011)

24. Shih YY, Hsu JS, Lin YR, Tsai SY, Chung HW ,"Dynamic contrast-enhanced three-dimensional lung imaging acceleration using k-t PCA", International Society of Magnetic Resonance in Medicine, 19th Annual Meeting, #2850, Montreal, Canada. (2011)

25. Liou ST, Chung HW, Chang WT, Tsai WK, Lin FH ,"Virtually independent Gaussian channel nulling (VIPGen) image reconstruction for functional magnetic resonance inverse imaging (fMRInI) ", International Society of Magnetic Resonance in Medicine, 19th Annual Meeting, #2894, Montreal, Canada. (2011)

26. Peng HH, Huang TY, Tseng WM, Ding YH, Chung HW, Chen WS, Tseng WYI,"Real-time monitoring of temperature and magnetization transfer during HIFU transmission and long-term follow-up of magnetization transfer effect: in vivo rabbit investigations", International Society of Magnetic Resonance in Medicine, 19th Annual Meeting, #3717, Montreal, Canada. (2011)

27. Wu PH, Chen NK, Chung HW ,"Elimination of susceptibility-induced distortion in the T2*-decay curve with an improved fitting procedure", International Society of Magnetic Resonance in Medicine, 19th Annual Meeting, #4559, Montreal, Canada. (2011)

28. Chang HC, Juan CJ, Chuang TC, Chung HW,"PROPELLER-EPI-DWI with oblique N/2 ghost correction using 2D linear phase correction and interlaced Fourier transform reconstruction",International Society of Magnetic Resonance in Medicine, 19th Annual Meeting, #4612, Montreal, Canada. (2011)

29. Tsai PH, Chung HW, Huang GS,"Variable fiber orientations of knee cartilages investigated by zonal T2* measurements with automatic segmentation", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #834, Stockholm, Sweden. (2010)

30. Tsai PH, Chou MC, Lin MH, Lin CY, Chung HW, Lee HS, Huang GS,"Sequential change of rat cartilage and subchondral bone with experimental osteoarthritis investigated by quantitative T2* measurements", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #838, Stockholm, Sweden. (2010)

31. Lin JM, Chung HW, Tsai SY ," Removal of FM sidebands artifacts in NWS MRS by QZ-Bac algorithm", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #949, Stockholm, Sweden. (2010)

32. Chung HW, Wu WC,"Error propagation in CMRO2 derivations using CBF and BOLD imaging",International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #1135, Stockholm, Sweden. (2010)

33. Liou ST, Chung HW, Chang WT, Lin FH ,"Eigenspace minimum L1-norm beamformer reconstruction of functional magnetic resonance inverse imaging of visuomotor processing",International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #1155, Stockholm, Sweden. (2010)

34. Niu HC, Chung HW, Huang TY, Lin FH ,"Slice shimming method for reduction of susceptibility artifacts with PatLoc system",International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #1543, Stockholm, Sweden. (2010)

35. Chiu SC, Juan CJ, Chung HW, Cheng CC, Chang HC, Chiu HC, Hsu CH, Chen CY, Huang GS,"Effects of fat saturation on perfusion parameter quantifications for the parotid glands in dynamic contrast-enhanced MRI", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #1732, Stockholm, Sweden. (2010)

36. Peng HH, Huang TY, Chung HW, Chen PC, Ding YH, Ju SY, Yang YH, Tseng WYI, Chen WS ," Three-slice MR pre-treatment temperature mapping and spherical model estimation for accurate localization of the heating focus before high-intensity focused ultrasound treatment", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #1809, Stockholm, Sweden. (2010)

37. Peng HH, Huang TY, Chung HW, Ju SY, Yang YH, Chen PC, Ding YH, Chen WS, Tseng WYI ," Simultaneous monitoring of temperature and magnetization transfer during HIFU transmission: in vivo rabbit investigations",International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #1812, Stockholm, Sweden(2010).

38. Lai PH, Chang HC, Chung HW,"Multi-layer appearance of abscess capsule on post-Gd SWI images: effects of filtering and phase mask", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #2187, Stockholm, Sweden. (2010)

39. Liu YJ, Juan CJ, Huang TY, Chung HW, Chen CY ,"Cerebral blood flow change in one heart beat by CO2 concentration using retrospective PC MRI measurements", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #2250, Stockholm, Sweden. (2010)

40. Cheng CC, Juan CJ, Chung HW, Jen YM, Chiu SC, Chang HC, Chiu HC, Hsu CH, Huang GS, Chen CY ,"Parotid sparing volume-dependent perfusion characteristics of acute radiation injury: investigated by fat-saturated dynamic contrast-enhanced MRI", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #2415, Stockholm, Sweden. (2010)

41. Juan CJ, Chang HC, Chen CY, Kao HW, Hsueh CJ, Wang CW, Cheng CC, Chiu SC, Chung HW, Huang GS,"Oral tongue squamous cell carcinoma evaluated by PROPELLER and echo-planar diffusion-weighted imaging", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #2418, Stockholm, Sweden. (2010)

42. Chang HC, Juan CJ, Liu YJ, Lin CC, Shen H, Chuang TC, Chung HW ,"ZOOM- PROPELLER-EPI: non-axial imaging at small FOV with PROPELLER-EPI", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #2902, Stockholm, Sweden. (2010)

43. Chu ML, Hsu JS, Chung HW ,"On motion estimation and compensation baseline estimations in dynamic imaging: a comparative study with cine cardiac and contrast-enhanced lung imaging",International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #3049, Stockholm, Sweden. (2010)

44. Chu ML, Hsu JS, Chung HW,"Reconstruction exploiting phase-correlation motion estimation and motion compensation methods for cine cardiac imaging",International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #3078, Stockholm, Sweden. (2010)

45. Tsai PH, Chung HW, Huang TY," Optimization of human meniscus imaging using minimal phase RF pulse",International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #3181, Stockholm, Sweden. (2010)

46. Chou MC, Cheng YW, Ko CW, Chuang TC, Wang FN, Huang TY, Chung HW,"Reduce blurring effects in PROPELLER QBI ",International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #4000, Stockholm, Sweden. (2010)

47. Chiu HC, Juan CJ, Chang HC, Chung HW, Cheng CC, Chiu SC, Cheng CY, Chen CY, Huang GS ,"The effects of age, gender and BMI on parotid fat and parotid ADC measurements in EPI based and FSE-PROPELLER based diffusion weighted imaging", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #4308, Stockholm, Sweden. (2010)

48. Juan CJ, Chang HC, Yu CY, Liou CH, Chen CY, Hsueh CJ, Kao HW, Wang CW, Chung HW, Huang GS ," Does the measurement of liver and vertebral fat content influenced by R2* effect in T2*-IDEAL: A comparison study with 3-point IDEAL and MRS in healthy volunteers", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #4652, Stockholm, Sweden. (2010)

49. Juan CJ, Chang HC, Chung HW, Chu CH, Cheng CC, Chiu SC, Chiu HC, Hsu CH, Chen CY, Huang GS,"Comparison of liver ADC measurements using breath-hold, free breath-hold and respiratory gating echoplanar diffusion-weighted imaging sequences using parallel imaging

technique with different acceleration factors", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #4708, Stockholm, Sweden. (2010)

50. Chang HC, Juan CJ, Liu YJ, Lin CC, Shen H, Chuang TC, Chung HW,"Comparison of applying 1D phase and 2D phase N/2 ghost correction prior to PROPELLER-EPI reconstruction", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #5061, Stockholm, Sweden. (2010)

51. Hsu JS, Tsai SY, Lin YR, Chung HW ,"On accelerated dynamic contrast-enhanced lung perfusion using k-t BLAST", International Society of Magnetic Resonance in Medicine, 18th Annual Meeting, #5075, Stockholm, Sweden. (2010)

賴飛羆教授 Fei-Pei Lai, Professor

※學術期刊論文 Journal articles & book chapters

1. Yi-Ju Tseng, Jung-Hsuan Wu, Xiao-Ou Ping, Hui-Chi Lin, Ying-Yu Chen, Rong-Ji Shang, Ming-Yuan Chen, Feipei Lai, Yee-Chun Chen, "A Web-Based Multidrug-Resistant Organisms Surveillance and Outbreak Detection System with Rule-Based Classification and Clustering," Journal of Medical Internet Research.
2. Hwan-Jeu Yu, Chia-Ping Shen, Sarangerel Dorjgochoo, Chi-Huang Chen, Jin-Ming Wu, Mei-Shu Lai, Ching-Ting Tan, Chinburen Jigjidsuren, Erdenebaatar Altangerel, Hung-Chang Lee, Chih-Wen Hsueh, Yufang Chung, and Feipei Lai, "A physician order category-based clinical guideline comparison system," Journal of Medical Systems, DOI 10.1007/s10916-012-9847-x.
3. Li-Chin Chen, Chi-Wen Chen, Yung-Ching Weng, Rung-Ji Shang, Hui-Chu Yu, Yufang Chung, Feipei Lai, "An Information Technology Framework for Strengthening Telehealthcare Service Delivery," Journal of Telemedicine and e-Health, Vol. , No. , pp. , April 2012.
4. Chia-Ping Shen, Wen-Chung Kao, Yueh-Yiing Yang, Ming-Chai Hsu, Yuan-Ting Wu, and Feipei Lai, "Detection of cardiac arrhythmia in electrocardiograms using adaptive feature extraction and modified support vector machines," Expert Systems With Applications (2012), doi:10.1016/j.eswa.2012.01.093.
5. Hsien-Cheng Chou, Hung-Chang Lee, Chih-Wen Hsueh and Feipei Lai, "Password Cracking Based on Special Keyboard Patterns," International Journal of Innovative Computing, Information and Control, Volume 8, Number 1, pp. 387-402, January 2012.
6. K-C. Ting, H-C. Lee and Feipei Lai, "A scalable, high-performance grouping DCF for the MAC layer enhancement of 802.11n," Int. J. Communication Networks and Distributed Systems, Vol. 7, Nos. 1/2, pp. 101-118, 2011.
7. Zhen-Yu Wu, Yufang Chung, Feipei Lai, Tzer-Shyong Chen and Hung-Chang Lee, "An Enhanced Password-based User Authentication Scheme for Grid Computing," International Journal of Innovative Computing, Information and Control, Vol. 7, No. 7, July 2011.
8. Chia-Ping Shen, Chinburen Jigjidsuren, Sarangerel Dorjgochoo, Chi-Huang Chen, Wei-Hsin Chen, Chih-Kuo Hsu, Jin-Ming Wu, Chih-Wen Hsueh, Mei-Shu Lai, Ching-Ting Tan, Erdenebaatar Altangerel, and Feipei Lai, "A Data-mining Framework for Transnational Healthcare System," Journal of Medical Systems, May 2011.
9. Zhen-Yu Wu, YJ Tseng, Yufang Chung, YC Chen, Feipei Lai, "A Reliable User Authentication and Key Agreement Scheme for Web-Based Hospital-Acquired Infection Surveillance Information System," Journal of Medical Systems, May 2011.
10. Wei-Hsin Chen, Yu-Wen Lu, Feipei Lai, Yin-Hsiu Chien, Wuh-Liang Hwu, "Integrating Human Genome Database into Electronic Health Record with Sequence Alignment and Compression Mechanism," Journal of Medical Systems, May 2011.
11. Zhen-Yu Wu, Chih-Wen Hsueh, Cheng-Yu Tsai, Feipei Lai, Hung-Chang Lee and Yufang Chung, "Redactable Signatures for Signed CDA Documents," Journal of Medical Systems, DOI 10.1007/s10916-010-9639-0, 7 December 2010.
12. Hsin-Lu Chang, Michael J Shaw, Feipei Lai, Wen-Je Ko, Yi-Lwun Ho, Heng-Shuen Chen and Chin-Chung Shu, "U-Health: an example of a high-quality individualized healthcare service, " Personalized Medicine, Vol. 7, No. 6, pp. 677-687, Nov. 2010.

13. Z. Y. Wu, Y. C. Lee, Feipei Lai, H. C. Lee, and Y. F. Chung, "A Secure Authentication Scheme for Telecare Medicine Information Systems," Journal of Medical Systems, Available online Oct. 27, 2010. (SCI, IF: 0.654) (DOI: 10.1007/s10916-010-9614-9)

14. Chen YP, Hsieh SH, Cheng PH, Chien TN, Chen HS, Luh JJ, Lai JS, Feipei Lai, Chen SJ, "An agile enterprise regulation architecture for health information security management," Telemed J E Health. 2010 Sep.;16(7):807-17.

15. Z. Y. Wu, Y. F. Chung, Feipei Lai, and T. S. Chen, "A Password-based User Authentication Scheme for the Integrated EPR Information System," Journal of Medical Systems, Available online May 27, 2010. (SCI, IF: 0.654) (DOI: 10.1007/s10916-010-9527-7)

16. Po-Hsun Cheng, Heng-Shuen Chen, Feipei Lai and Jin-Shin Lai, "The Strategic Use of Standardized Information Exchange Technology in a University Health System," Journal of Telemedicine and e-Health, Vol. 16, No. 3, pp. 315-326, April 2010.

※研討會論文 Conference & proceeding papers

1. Feipei Lai, Pei-chun Lin, Chia-ping Shen, Jui-hung Kao, Jin-ming Wu, Shih-ting Liu, Weizhi Zhou, Hani Ousamah Jamleh, Chung-ping Charlie Chen, "Telecare with Integrated Health Portal and Smart Phones," Medicine 2.0'12, 5th World Congress on Social Media, Mobile Apps, and Internet/Web 2.0 in Medicine and public health, Sept. 15-16, 2012, Boston, USA.
2. Jui-Hung Kao, Feipei Lai, Wei-Zen Sun, Chia-Ping Shen, Huei-Ming Ma, Jin-Ming Wu, Meng-Yu Chiu, Horng-Twu Liaw, Kai-Chieh Hsu, Yan-Yu Lam and Shih-Ching Cheng, "A web-based medical emergency guiding system," International Symposium on Network Enabled Health Informatics, Biomedicine and Bioinformatics HI-BI-BI 2012, 27-28 August, 2012, Kadir Has University, Istanbul, Turkey.
3. Chia-Ping Shen, Chia-Hung Liu, Feng-Sheng Lin, Han Lin, Chi-Ying F. Huang, Cheng-Yan Kao, Feipei Lai, Jeng-Wei Lin, "A Multiclass Classification Tool Using Cloud Computing Architecture," International Symposium on Network Enabled Health Informatics, Biomedicine and Bioinformatics HI-BI-BI 2012, 27-28 August, 2012, Kadir Has University, Istanbul, Turkey.
4. Wei-Hsin Chen, Han-Ping Chen, Yi-Ju Tseng, Kai-Ping Hsu, Sheau-Ling Hsieh, Yin-Hsiu Chien, Wuh-Liang Hwu, Feipei Lai, "Newborn Screening for Phenylketonuria: Machine Learning vs Clinicians," International Symposium on Network Enabled Health Informatics, Biomedicine and Bioinformatics HI-BI-BI 2012, 27-28 August, 2012, Kadir Has University, Istanbul, Turkey.
5. Mu-Hsing Kuo, Andre Kushniruk, Elizabeth Borycki, Feipei Lai, Sarangerel Dorjgochoo, Erdenebaatar Altangerel and Chinburen Jigjidsuren, "A Cloud Computing Based Platform for Sharing Healthcare Research Information," IEEE&ACM The 2012 International Conference on Collaboration Technologies and Systems, May 21-25, Denver, Colorado, USA.
6. Hsin-Tsung Peng, Chi-Fang Chang, Szu-Lang Liao, Ming-Yang Kao, Feipei Lai and Jan-Ming Ho, "The Development of a Real-time Valuation Service of Financial Derivatives," IEEE Computational Intelligence for Financial Engineering & Economics 2012, March 29-30, New York City, NY, USA.
7. Chia-Ping Shen, Chih-Min Chan, Feng-Sheng Lin, Ming-Jang Chiu, Jeng-Wei Lin, Jui-Hung Kao, Chung-Ping Chen and Feipei Lai, "Epileptic Seizure Detection for Multichannel EEG Signals with Support Vector Machines," 11th IEEE International Conference on Bioinformatics and Bioengineering, Oct. 24-26, 2011, Taichung, Taiwan.
8. Yuan-Ting Wu, Pei-Chun Lin, Feng Seng Lin, Hani Ousamah Jamleh, Chia-Ping Shen, Shih-Ting Liu, Jin-Ming Wu, Charlie Chen Chung-Ping, and Feipei Lai, "Online Mobile ECG Measurement and Diagnosis with Cloud Computation," The Second AMA-IEEE Medical Technology Conference on Individualized Healthcare, Boston, MA. USA, Oct. 16-18, 2011.
9. Ching-Wei Hsu, Xiao-Ou Ping, Ja-Der Liang, Yi-Ju Tseng, Ya-Lin Wu, Pei-Ming Yang, Guan-Tarn Huang, Yufang Chung, and Feipei Lai, "A CBR-based method for retrieving similar patients from case base," The Second AMA-IEEE Medical Technology Conference on Individualized Healthcare, Boston, MA. USA, Oct. 16-18, 2011.
10. Ya-Lin Wu, Xiao-Ou Ping, Ja-Der Liang, Yi-Ju Tseng, Ching-Wei Hsu, Pei-Ming Yang, Guan-Tarn Huang, and Feipei Lai, "A Method for Identifying Confidence Level of the Extracted Results from Medical Narrative Reports: A Case Study Focuses on the Patients with Liver Cancer ," The Second AMA-IEEE Medical Technology Conference on Individualized Healthcare, Boston, MA. USA, Oct. 16-18, 2011.
11. Yi-Ju Tseng, Selina YF Lee, Xiao-Ou Ping and Feipei Lai, "Describing Electronic Medical Record by Semantic Web Technology," The Second AMA-IEEE Medical Technology Conference on Individualized Healthcare, Boston, MA. USA, Oct. 16-18, 2011.
12. Li-Chin Chen, Hao-Chun Li, Yi-Van Wang, Huang-Jen Chen, Chung-Ching Shih, Lee-Ming Chuang, and Feipei Lai, "Workflow-Structured Modeling for HIV Disease Control and Management Information System," The Second AMA-IEEE Medical Technology Conference on Individualized Healthcare, Boston, MA. USA, Oct. 16-18, 2011.
13. Xiao-Ou Ping, Ja-Der Liang, Yi-Ju Tseng, Pei-Ming Yang, Guan-Tarn Huang, and Feipei Lai, "The methodology for handling missing data

during development of predictive model," The Second AMA-IEEE Medical Technology Conference on Individualized Healthcare, Boston, MA. USA, Oct. 16-18, 2011.

14. Ruei-chi Shen, Chin-Hung Peng, and Feipei Lai, "An Early Design Estimation Approach to Synthesize the Low-Power Pre-Computation-Based Content Addressable Memory," IEEE Conference on Open System, 25-28 September 2011, Langkawi, Malaysia.

15. Zhuo-Rong Li, En-Chi Chang, Kuo-Hsuan Huang, Feipei Lai, "A Secure Electronic Medical Record Sharing Mechanism in the Cloud Computing Platform," The 15th IEEE Symposium on Consumer Electronics, June 14-17, 2011, Singapore.

16. En-Chi Chang, Kuo-Hsuan Huang, An-Bang Lu, Feipei Lai, "Enterprise Digital Rights Management System based on Smart Card," The 15th IEEE Symposium on Consumer Electronics, June 14-17, 2011, Singapore.

17. Wei-Hsin Chen, Feipei Lai, "A Reliable Password-based User Authentication Scheme for Web-based Human Genome Database System," The 5th 2011 IEEE International Conference on Digital Ecosystems and Technologies (IEEE DEST 2011), Deajeon, Korea, 31st May 2011-3rd June 2011.

18. Cheng-Hao Chan, Kun-Lin Tsai, Feipei Lai, and Shun-Hung Tsai, "A Priority Based Output Arbiter for NoC Router", The 2011 IEEE International Symposium on Circuits and Systems, Rio de Janeiro, Brazil, 15-18 May 2011.

19. Kuan-Ju Chen, Chin-Hung Peng, and Feipei Lai, "Star-Type Architecture with Low Transmission Latency for a 2D Mesh NOC," 2010 Asia Pacific Conference on Circuits and Systems (APCCAS 2010), December 6-9, 2010, Kuala Lumpur, Malaysia.

20. Kam-Tou Sio, Feipei Lai, and Chin-Hung Peng, "CAM Puzzle: A Power Model and Function-Based Circuit Segment Method of Content Addressable Memory," 2010 Asia Pacific Conference on Circuits and Systems (APCCAS 2010), December 6-9, 2010, Kuala Lumpur, Malaysia.

21. Jui Tung, Kam-Tou Sio, Chin-Hung Peng, and Feipei Lai, "A SystemC Content Addressable Memory Power Estimation Tool for Early Design Verification," 2010 Asia Pacific Conference on Circuits and Systems (APCCAS 2010), December 6-9, 2010, Kuala Lumpur, Malaysia.

22. Yi-Ju Tseng, Yee-Chun Chen, Hui-Chi Lin, Jung-Hsuan Wu, Ming-Yuan Chen and Feipei Lai, "A web-based hospital-acquired infection surveillance information system," The 10th IEEE International Conference on Information Technology and Applications in Biomedicine, Corfu, Greece, November 2-5, 2010

23. Kuo-Chang Ting, Fang-Chang Kuo, Bor-Jiunn Hwang, Hwang-Cheng Wang, and Feipei Lai, "An accurate power analysis model based on MAC layer for the DCF of 802.11n," The 2010 IEEE International Symposium on Parallel and Distributed Processing with Applications, Sept. 6 – 9, 2010, Taipei, Taiwan.

24. Pei Hsuan Wu, Chi-Huang Chen, Huai-Te Chen, Che-Hsuan Shu, Feng-Sheng Lin, Yi-Van Wang, Hao-Jhun Li, Yuan-Ting Wu, Feipei Lai, "User Inspection of National Taiwan University's Telehealth Care System," 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, August 31 - September 4, 2010, Buenos Aires, Argentina.

25. Chi-Huang Chen, Sheau-Ling Hsieh, Yung-Ching Weng, Wen-Yung Chang, Feipei Lai, "Semantic Similarity Measure in Biomedical Domain Leverage Web Search Engine," 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, August 31 - September 4, 2010, Buenos Aires, Argentina.

26. Sheau-Ling Hsieh, Yung-Ching Weng, Chi-Huang Chen, Kai-Ping Hsu, Jeng-Wei Lin, Feipei Lai, "Web-Based Healthcare Hand Drawing Management System," 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, August 31 - September 4, 2010, Buenos Aires, Argentina.

27. Chia-Ping Shen, Wei-Hsin Chen, Jia-Ming Chen, Kai-Ping Hsu, Jeng-Wei Lin, Ming-Jang Chiu, Chi-Huang Chen, Feipei Lai, "Bio-Signal Analysis System Design with Support Vector Machines Based on Cloud Computing Service Architecture," 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, August 31 - September 4, 2010, Buenos Aires, Argentina.

28. Kun-Lin Tsai, Feipei Lai, Chien-Yu Pan, Di-Sheng Xiao, Hsiang-Jen Tan and Hung-Chang Lee, "Design of Low latency on-chip communication based on hybrid NoC Architecture," in Proc. of IEEE Intl. NEWCAS Conf., Montreal, Canada, June 2010, pp. 257-260.

29. Chung-Huang Jiang, Kun-Lin Tsai, Feipei Lai and Shun-Hung Tsai, "Distinguishable Error Detection Method for Network on Chip," in Proc. of IEEE Intl. Symposium on Circuits and Systems (ISCAS), Paris, France, May 2010, pp. 3733-3736.

30. H. L. Chang, Michael J. Shaw, Feipei Lai, Y. L. Ho, W. J. Ko, Hang-Shuen Chen, "Delivering High-Quality Individualized Healthcare: An Illustration of U-Health Service Design in National Taiwan University Hospital," The First AMA-IEEE Medical Technology Conference on Individualized Healthcare, Washington D. C., USA, March 21-23, 2010.

31. Feipei Lai, Yu-Tzu Dai, Chin-Chung Shu, Ying-Hsien Chen, Hui-Chun Huang, Li-Chin Chen, "An Infrastructure to Enabling Integration of Personal Telehealthcare into Taiwan National Health Insurance," The First AMA-IEEE Medical Technology Conference on Individualized Healthcare, Washington D. C., USA, March 21-23, 2010.

32. Xiao-Ou Ping, Mei-Shu Lai, Ching-Ting Tan, J. D. Liang, Hung-Chang Lee, Chi-Huang Chen, Yi-Ju Tseng, Zi-Jun Wang, and Feipei Lai, "An infrastructure for clinical data extraction, medical knowledge and mining services sharing," The First AMA-IEEE Medical Technology Conference on Individualized Healthcare, Washington D. C., USA, March 21-23, 2010.

※專書 Books

1. Hsin-Lu Chang, Michael J. Shaw, and Feipei Lai, "Service Systems as Digital Products," Digital Product Management, Technology and Practice: Interdisciplinary Perspectives, edited by Troy J. Strader, IGI Global, 2011.
2. Yung-Ching Weng, Sheau-Ling Hsieh, Kai-Ping Hsu, Chi-Huang Chen, Po Hsun Cheng and Feipei Lai, "A Dynamic Healthcare Portal Design and Enhancements," Web Intelligence and Intelligent Agents, Zeeshan-ul-hassan Usmani PhD (Ed.), ISBN: 978-953-7619-85-5, INTECH, 2010.
3. Po-Hsun Cheng, Sheau-Ling Hsieh, Tsan-Nan Chien, Ying-Pei Chen, Mei-Ju Su, Yung-Chien Weng, Sao-Jie Chen, Feipei Lai and Jin-Shin Lai, Understanding Discrepancy: A Conceptual Persistent Healthcare Quality Improvement Process for Software Development Management, Process Management, Maria Pomffyova (Ed.), ISBN: 978-953-307-085-8, INTECH, 2010.

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

※學術期刊論文 Journal articles & book chapters

1. Y.-F. Li and P.-C. Li*, "Ultrasound Beamforming Using Compressed Data", IEEE Transactions on Information Technology in Biomedicine (accepted).
2. P.-W. Cheng, C.-C. Shen and P.-C. Li*, "MPEG compression of ultrasound RF channel data for a real-time software-based imaging system", IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control (accepted).
3. J.-K. Chen, M.-L. Wang, X.-Y. Cheng, Y.-H. Wang, P.-C. Li* and J.-C. Cheng, "A Photoacoustic Imager with Light Illumination through an Infrared-Transparent Silicon CMUT Array", IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control (accepted).
4. A.-H. Liao, H.-L. Liu, C.-H. Su, M.-Y. Hua, H.-W. Yang, Y.-T. Weng, P.-H. Hsu, S.-M. Huang, S.-Y. Wu, H.-E. Wang, T.-C. Yen and P.-C. Li*, "Paramagnetic Perfluorocarbon-Filled Albumin-(Gd-DTPA) Microbubbles for the Induction of Focused-Ultrasound-Induced Blood–Brain Barrier Opening and Concurrent MR and Ultrasound Imaging", Physics in Medicine and Biology, vol. 57, no. 9, pp. 2787-2802, May, 2012.
5. Y.-H. Wang, A.-H. Liao, J.-H. Chen, C.-R. Wang and P.-C. Li*, "A Photoacoustic/Ultrasound Dual-Modality Contrast Agent and its Application to Thermotherapy", Journal of Biomedical Optics, Vol. 17, No. 4, 045001, April, 2012.
6. B.-Y. Hsieh, S.-L. Chen, T. Ling, L. Jay Guo and P.-C. Li*, "All-optical scanhead for ultrasound and photoacoustic dual-modality imaging", Optics Express, Vol. 20, No. 2, pp.1588-1596, 2012.
7. S.-H. Wang, C.-W. Wei, S.-H. Jee, and P.-C. Li*, "Quantitative Thermal Imaging for Plasmonic Photothermal Therapy", Journal of Medical and Biological Engineering, 31 , 6 , 387 -393 , 12, 2011 (Best paper of the year)
8. S.-C. Lin and P.-C. Li*, "Automatic contrast enhancement using ensemble empirical mode decomposition", IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control, Vol. 58, Issue: 12, 58 , 0 , 2680 -2688 , 12, 2011
9. Y.-L. Sheu, C.-Y. Chou, B.-Y. Hsieh and P.-C. Li*, "Image reconstruction in intravascular photoacoustic imaging", IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control, Vol. 58, Issue: 10, 58 , 0 , 2067 -2077 , 10, 2011
10. Y.-H. Wang and P.-C. Li*, "Ultrafast photoacoustic imaging and its application to real–time 3d imaging with improved focusing", Ultrasonic Imaging, 33 , 0 , 189 -196 , 07, 2011

11. Y.-F. Li and P.-C. Li*, "Software beamforming: comparison between a phased array and synthetic transmit aperture", Ultrasonic Imaging, 33 , 0 , 109 -118 , 04, 2011

12. S.-Y. Su and P.-C. Li*, "Coded Excitation for Photoacoustic Imaging Using a High-Speed Diode Laser", Optics Express, 19 , 2 , 1174 -1182 , 01, 2011

13. B.-Y. Hsieh, S.-L. Chen, T. Ling, L. J. Guo, and P.-C. Li*, "Integrated intravascular ultrasound and photoacoustic imaging scan head", Optics Letters, 35 , 17 , 2892 -2894 , 09, 2010

14. A.-H. Liao, C.-C. Shen and P.-C. Li*, "Potential Contrast Improvement in Ultrasound Pulse Inversion Imaging Using EMD and EEMD", IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control, 57 , 2 , 317 -326 , 02, 2010

15. L.-C. Chen, C.-W. Wei, J. S. Souris, S.-H. Cheng, C.-T. Chen, C.-S. Yang, P.-C. Li,* and L.-W. Lo, "Enhanced Photoacoustic Stability of Gold Nanorods by Silica Matrix Confinement", Journal of Biomedical Optics, Vol. 15, 016010, 15 , 0 , 0 -0 , 02, 2010

16. Y.-H. Chuang, P.-W. Cheng, S.-C. Chen, J.-L. Ruan and P.-C. Li*, "Effects of Ultrasound-Induced Inertial Cavitation on Enzymatic Thrombolysis", Ultrasonic Imaging, Vol. 32, pp. 33-47, 32 , 0 , 33 -47 , 01, 2010

17. S.-L. Wang and P.-C. Li*, "Aperture-Domain Processing and its Applications in Ultrasound Imaging: a Review", Journal of Engineering in Medicine, Vol. 224 (H2), 224 , 0 , 143 -154 , 01, 2010

18. S.-Y. Wu, S.-L. Wang and P.-C. Li*, "Speckle Tracking in High-Frame-Rate Imaging", Ultrasonic Imaging, 32 , 0 , 1 -15 , 00, 2010

※研討會論文 Conference & proceeding papers

1. P.-C. Li, "Ultrasound power measurements and clinical safety", 2012 Joint Congress of Medical Ultrasound, Seoul, Korea, May 11-13, 2012.

2. P.-C. Li, "Acoustics based multi-modality molecular imaging and targeted therapy", International Symposium on Ultrasound Molecular Imaging (ISUMI), invited talk, Chongqing, China, April 27-29, 2012.

3. P.-C. Li, "Wireless neural stimulation using ultrasound", 2011 Symposium on Piezoelectricity, Acoustic waves, and Device Applications (SPAWDA 2011), invited talk, Shenzhen, China, December 9-11, 2011.

4. P.-C. Li, "Photoacoustic and photothermal techniques with gold nanoparticles for theragnosis", 16th International Conference on Photoacoustic and Photothermal Phenomena, invited talk, Merida, Mexico, November 27-December 1, 2011.

5. P.-C. Li, "Acoustic power measurements and safety in medical ultrasound", AFSUMB Workshop, invited talk, Bali, Indonesia, November 19, 2011.

6. L.-Y. Tseng, L.-C. Lin, P.-C. Li, "3D cardiac strain imaging using plane wave excitation and feature tracking", IEEE International Ultrasonics Symposium, Orlando, Florida, USA, October 18-21, 2011.

7. Y.-H. Wang, P.-C. Li, "SNR-Dependent Coherence Weighting for Minimum Variance Beamforming", IEEE International Ultrasonics Symposium, Orlando, Florida, USA, October 18-21, 2011.

8. K.-H. Huang, J.-H. Liu, P.-C. Li, "Improved Depth of Focus for Single Element Annular Transducers", IEEE International Ultrasonics Symposium, Orlando, Florida, USA, October 18-21, 2011.

9. P.-W. Cheng, C.-C. Shen, P.-C. Li, "Ultrasound RF Channel Data Compression for Implementation of a Software-Based Array Imaging System", IEEE International Ultrasonics Symposium, Orlando, Florida, USA, October 18-21, 2011.

10. B.-Y. Hsieh, S.-L. Chen, T. Ling, J. Kuo, P.-C. Li, "All optical generation and detection of acoustic waves for intravascular ultrasound", IEEE International Ultrasonics Symposium, Orlando, Florida, USA, October 18-21, 2011.

11. J.-Y. Tsai, K.-H. Huang, J.-R. Wang, S.-I. Liu, P.-C. Li, "Ultrasonic wireless power and data communication for neural stimulation", IEEE International Ultrasonics Symposium, Orlando, Florida, USA, October 18-21, 2011.

12. P.-C. Li, "Photoacoustic molecular imaging and targeted therapy using gold nanoparticles", 19th International Conference on Advanced Laser Technologies, invited talk, Golden Sands, Bulgaria, September 3-8, 2011.

13. M. Wang, J. Chen, Y.-H. Wang and P.-C. Li, "A Photoacoustic Imager with Infrared Illumination Through the CMUT Chip", The 16th International Conference on Solid-State Sensors, Actuators and Microsystems, Beijing, China, June 5-9, 2011.

14. Y.-H. Wang, A.-H. Liao, J.-H. Chen, Y.-H. Lee, C.-R. Wang and P.-C. Li, "Thermotherapy with a Photoacoustic/Ultrasound Dual-modality Agent", SPIE Photonics West 2011, San Francisco, California, January 22-27, 2011.

15. S.-Y. Sue and P.-C. Li, "Photoacoustic Generation Using Coded Excitation", SPIE Photonics West 2011, San Francisco, California, January 22-27, 2011.

16. Y.-H. Wang and P.-C. Li, "Ultrafast Photoacoustic Imaging with Improved Elevational Focusing", SPIE Photonics West 2011, San Francisco, California, January 22-27, 2011.

17. C.-L. Hu, G.-S. Jeng, Y.-H. Wang, P.-C. Li and M.-L. Li, "Improved Plane-wave High Frame Rate Imaging Using Filter-based Retrospective Focusing and Coherent Weighting", Symposium of Annual Conference of the Biomedical Engineering Society, Kaohsiung, Taiwan, R.O.C., December 10-11, 2010.

18. P.-C. Li, E.-Y. Chuang and Y.-F. Tseng, "Integrated Approach to Dissecting Resistance of Anti-cancer Treatment", Symposium of Annual Conference of the Biomedical Engineering Society, Kaohsiung, Taiwan, R.O.C., December 10-11, 2010.

19. P.-W. Cheng and P.-C. Li, "High Frame Rate Ultrasonic Channel Data Compression Using MPEG Technology", Symposium of Annual Conference of the Biomedical Engineering Society, Kaohsiung, Taiwan, R.O.C., December 10-11, 2010.

20. L.-Y. Tseng and P.-C. Li, "Motion Analysis in Ultrasound Plane-wave Excitation Imaging By Feature Tracking", Symposium of Annual Conference of the Biomedical Engineering Society, Kaohsiung, Taiwan, R.O.C., December 10-11, 2010.

21. Y.-H. Wang, A.-H. Liao, J.-H. Chen, C.-R. Wang and P.-C. Li, "Photoacoustic/ Ultrasound Dual Modality Contrast Agent and Its Application to Laser-induced Thermotherapy", Symposium of Annual Conference of the Biomedical Engineering Society, Kaohsiung, Taiwan, R.O.C., December 10-11, 2010.

22. C.-L. Yeh, P.-L. Kuo and P.-C. Li, "Investigation on Joint Capsule Loosening by High-Intensity Pulsed Ultrasound", Symposium of Annual Conference of the Biomedical Engineering Society, Kaohsiung, Taiwan, R.O.C., December 10-11, 2010.

23. C.-L. Yeh and P.-C. Li, "Shear Wave Elasticity Imaging Using an Ultrasound Array System", Symposium of Annual Conference of the Biomedical Engineering Society, Kaohsiung, Taiwan, R.O.C., December 10-11, 2010.

24. K.-H. Huang, J.-H. Liu, P.-C. Li, "A Filtering Approach to Improving Depth of Single Element Annular Transducer", Symposium of Annual Conference of the Biomedical Engineering Society, Kaohsiung, Taiwan, R.O.C., December 10-11, 2010.

25. B.-Y. Hsieh, Y.-H. Chuang and P.-C. Li, "Development of IVPA/IVUS Imaging Technologies and Investigation on Ultrasound-assisted Thrombolysis(3/3)", Symposium of Annual Conference of the Biomedical Engineering Society, Kaohsiung, Taiwan, R.O.C., December 10-11, 2010.

26. J.-Y. Tsai and P.-C. Li, "The application of Ultrasonic Power Transfer for Wireless Neural Stimulator", Symposium of Annual Conference of the Biomedical Engineering Society, Kaohsiung, Taiwan, R.O.C., December 10-11, 2010. (Best Paper Award)

27. S.-C. Lin and P.-C. Li, "Automatic Contrast Enhancement Using Ensemble Empirical Mode Decomposition", Symposium of Annual Conference of the Biomedical Engineering Society, Kaohsiung, Taiwan, R.O.C., December 10-11, 2010. (Best Paper Award)

28. C.-L. Hu, G.-S. Jeng, Y.-H. Wang, P.-C. Li and M.-L. Li, "Improved Plane-Wave High Frame Rate Imaging Using Retrospective Transmit Focusing and Filter-derived Coherence-Index Weighting", 2010 IEEE International Ultrasonics Symposium, San Diego, California, October 11-14, 2010.

29. Y.-F. Li and P.-C. Li, "Ultrasound Beamforming with Compressed", 2010 IEEE International Ultrasonics Symposium, San Diego, California, October 11-14, 2010.

30. P.-L. Kuo, C.-L. Yeh and P.-C. Li, "Joint Capsule Loosening by High-Intensity Pulsed Ultrasound", 2010 IEEE International Ultrasonics Symposium, San Diego, California, October 11-14, 2010.

31. A.-H. Liao, H.-L. Liu, C.-H. Su, Y.-T. Weng, P.-H. Hsu, S.-M. Huang, S.-Y. Wu, H.-E. Wang, T.-C. Yen and P.-C. Li, "US/MRI Dual Modality Contrast Agent for Concurrent MR and Ultrasonic Imaging for Focused-Ultrasound Induced Blood-Brain Barrier Opening", 2010 IEEE International Ultrasonics Symposium, San Diego, California, October 11-14, 2010.

32. A.-H. Liao, Y.-H. Wang, Y.-T. Weng, C.-R. Wang and P.-C. Li, "An Imaging/therapeutic Molecular Probe for Ultrasound and Photoacoustic Dual

Modality System", 2010 IEEE International Ultrasonics Symposium, San Diego, California, October 11-14, 2010.

33. S.-Y. Su and P.-C. Li, "Photoacoustic Signal Generation with Golay Coded Excitatio", 2010 IEEE International Ultrasonics Symposium, San Diego, California, October 11-14, 2010.
34. P.-C. Li, "Photoacoustic Imaging and Photothermal Therapy of Cancer", Post-Congress Symposium of 2010 World Molecular Imaging Congress (WMIC), Taipei, Taiwan, September 13-14, 2010.
35. P.-W. Cheng and P.-C. Li, "Transcranial Microbubbles Destruction by Using Re-Focusing Ultrasound", 159th Meeting of the Acoustical Society of America, Baltimore, Maryland, April 19-23, 2010.
36. B.-Y. Hsieh, S.-L. Chen, T. Ling, L.-J. Guo and P.-C. Li, "Design and Fabrication of an Integrated Intravascular Ultrasound/ Photoacoustic Scan Head", SPIE International Symposium on Biomedical Optics, San Francisco, California, January 23-28, 2010.
37. Y.-L. Sheu, C.-Y. Chou, B.-Y. Hsieh and P.-C. Li, "Application of Limited-View Image Reconstruction Method to Intravascular Photoacoustic Tomography", SPIE International Symposium on Biomedical Optics, San Francisco, California, January 23-28, 2010.

歐陽彥正教授 Yen-Jen Oyang, Professor

※學術期刊論文 Journal articles & book chapters

1. Chen-Ching Lin, Ya-Jen Chen, Cho-Yi Chen, Yen-Jen Oyang, Hsueh-Fen Juan and Hsuan-Cheng Huang, "Crosstalk between transcription factors and microRNAs in human protein interaction network", BMC Systems Biology 6:18 doi:10.1186, March 2012.
2. Meng-HanYang, Peng-Hui Wang, Shuu-Jiun Wang, Wei-Zen Sun, Yen-Jen Oyang, and Jong-Ling Fuh, "Women with Endometriosis Are More Likely to Suffer from Migraines: A Population-Based Study", PLoS One 7(3):e33941.doi:10.1371, 2012.
3. Mei-Ju May Chen, Lih-Ching Chou, Tsung-ting Hsieh, Ding-Dar Lee, Kai-Wei Liu, Chi-Yuan Yu, Yen-Jen Oyang, Huai-Kuang Tsai, and Chien-Yu Chen, "De novo motif discovery facilitates identification of interactions between transcription factors in Saccharomyces cerevisiae", Bioinformatics 28(5): 701-708, 2012.
4. Chih-Min Liu, Cathy S-J Fann, Chien-Yu Chen, Yu-Li Liu, Yen-Jen Oyang, Wei-Chih Yang, Chien-Ching Chang, Chun-Chiang Wen, Wei J. Chen, Tzung-Jeng Hwang, Ming-Hsien Hsieh, Chen-Chung Liu, Stephen V. Faraone, Ming T. Tsuang, and Hai-Gwo Hwu*, "ANXA7, PPP3CB, DNAJC9, and ZMYND17 Genes at Chromosome 10q22 Associated with the Subgroup of Schizophrenia with Deficits in Attention and Executive Function", Biological Psychiatry, 70(1), pp.51-58, 2011.
5. D.D. Lee, C.K. Huang, P.C. Ko, Y.T. Chang, W.Z. Sun and Y.J. Oyang, "Association of primary cutaneous amyloidosis with atopic dermatitis: a nationwide population-based study in Taiwan", British Journal of Dermatology, published on-line on November 11, 2010. (SCI impact factor 4.2, ranking 4/48)
6. Chen-Ching Lin, Jen-Tsung Hsiang, Chia-Yi Wu, Yen-Jen Oyang, Hsueh-Fen Juan, and Hsuan-Cheng Huang, "Dynamic functional modules in co-expressed protein interaction networks of dilated cardiomyopathy", BMC Systems Biology, 4:138, 2010. (SCI impact factor 4.0, ranking 3/29)
7. Chih-Hung Hsieh, Darby Tien-Hao, Cheng-Hao Hsueh, Chi-Yeh Wu, and Yen-Jen Oyang, "Predicting microRNA precursors with a generalized Gaussian components based density estimation algorithm", BMC Bioinformatics, 11(S1):S52, 2010. (SCI impact factor 3.4, ranking 4/29)
8. Darby Tien-Hao Chang, Jung-Hsin Lin, Chih-Hung Hsieh, and Yen-Jen Oyang, "On the design of optimization algorithms for prediction of molecular interactions", International Journal on Artificial Intelligence Tools, 19:3, 2010.

宋孔彬助理教授 Kung-Bin Sung, Assistant Professor

※學術期刊論文 Journal articles & book chapters

1. Te-Yu Tseng, Chun-Yu Chen, Yi-Shan Li and Kung-Bin Sung*, "Quantification of the optical properties of two-layered turbid media by simultaneously analyzing the spectral and spatial information of steady-state diffuse reflectance spectroscopy", Biomedical Optics Express, 2(4), 901-914, Mar. 2011.
2. Te-Yu Tseng, Pau-Jen Lai, and Kung-Bin Sung *, "High-throughput detection of immobilized plasmonic nanoparticles by a hyperspectral imaging system based on Fourier transform spectrometry", Optics Express, 19 (2), 1291-1300, Jan. 2011.
3. Guo-Shan Chao and Kung-Bin Sung *, "Investigating the spectral characteristics of backscattering from heterogeneous spherical nuclei using broadband finite-difference time-domain simulations", Journal of Biomedical Optics, 15(1), 015007, Feb. 2010.

※研討會論文 Conference & proceeding papers

1. Shih-Chung Wei, Tsung-Liang Chuang, Hui-Hsin Lu, Chia-Chen Chang, Da-Shin Wang, Kung-Bin Sung *, and Chii-Wann Lin*, "Detection of tip-enhanced fluorescence from loop-mediated isothermal amplification of hepatitis B virus by two-photon microscopy", 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS '11), p. 490-493, Boston, MA, USA, Aug. 2011.
2. Ke-Pan Liao, Kung-Bin Sung, and Wei-Cheng Tian, "Precise sample positioning for multipoint immunoassay using nanofluidic preconcentrator", Proceedings of the 16th international solid-state sensors, actuators and microsystems conference (Transducers'11), p. 2239-2242, Beijing, China, Jun. 2011.
3. Guo-Shan Chao and Kung-Bin Sung *, "Investigating the spectral characteristics of backscattering from heterogeneous spheroidal nuclei using broadband finite-difference time-domain simulations", SPIE Photonics West - BiOS, Vol. 7573, p. 75730E, San Francisco, CA, USA, Feb. 2010.

曾宇鳳副教授 Y. Jane Tseng, Associate Professor

※學術期刊論文 Journal articles & book chapters

1. Su BH, Tu YS, Esposito EX, Tseng YJ*, "Predictive Toxicology Modeling: Protocols for Exploring hERG Classification and Tetrahymena pyriformis End Point Predictions",J Chem Inf Model. 2012, 52:1660-1673. (PMID: 22642982)
2. Kuo CH, Wang KC, Tian TF, Tsai MH, Chiung YM, Hsiech CM, Tsai SJ, Wang SY, Tsai DM, Huang CC, Tseng YJ*, "Metabolomic characterization of laborers exposed to welding fumes", Chem Res Toxicol. 2012, 25:676-686. (PMID: 22292500)
3. Tseng YJ*, "Hopfinger AJ, Esposito EX, The great descriptor melting pot: mixing descriptors for the common good of QSAR models", J Comput Aided Mol Des. 2012, 26:39-43. (PMID: 22200979)
4. Lin FY, Tseng YJ*, "Structure-based fragment hopping for lead optimization using predocked fragment database", J Chem Inf Model. 2011, 51:1703-15. (PMID: 21627327)
5. Su BH, Shen MY, Esposito EX, Hopfinger AJ, Tseng YJ *," A Comprehensive SVM Binary hERG Classification Model Based on Extensive but Biased Endpoint hERG Data Sets", Chem. Res. in Tox, 2011, 24: 934-949. (PMID: 21504223)
6. Wang SY, Ho TJ, Kuo CH, Tseng YJ*, "Chromaligner: a web server for chromatogram alignment", Bioinformatics, 2010, 26: 2338-2339. (PMID: 20576623)
7. BH Su, Shen MY, Esposito EX, Hopfinger AJ, Tseng YJ*, "In silico Binary Classification QSAR models based on 4D-fingerprints and MOE descriptors for prediction of hERG blockage", J. Chem. Inf. Model. 2010, 50, 1304-1318 (PMID: 20565102)
8. Kuo CH, Lee CW, Lin SC, Tsai IL, Lee SS, Tseng YJ*, Kang JJ, Peng FC, Li WC, "Rapid determination of aristolochic acids I and II in herbal products and biological samples by ultra-high-pressure liquid chromatography-tandem mass spectrometry", Talanta, 2010, 80: 1672-1680. (PMID: 20152395)

※研討會論文 Conference & proceeding papers

1. Chen SZ, Su BH, Tseng YJ* , " Predictive toxicity protocol for cell-viability high throughput data", 44th ACS National Meeting & Exposition, Philadelphia, USA, August 28 - Sept. 1, 2012

2. Tseng Y.J*, " LeadOp: Structure-based fragment hopping for lead optimization using pre-docked fragment database, (Invited Talk for Drug Discovery Symposium) ", 44th ACS National Meeting & Exposition, Philadelphia, USA, August 28 - Sept. 1, 2012

3. YJ Tseng*, CH Kuo, WQ Yang, SY Wang, "Metabolic Signatures Associated with the Progression of Breast Cancer by Ultra High Pressure Liquid Chromatography Time-of-Flight Mass Spectrometry" , the Metabolomics Society 8th Annual Meeting in Washington, DC., June 25-28, 2012

4. WQ Yang, CC Ho, YJ Tseng*, CH Kuo*, "Development of a Solid-Phase Microextraction Gas Chromatography Time-of-Flight Mass Spectrometry Method for Profiling Volatile Metabolic Patterns of Exhaled Breath Condensate", the 60th ASMS Conference on Mass Spectrometry and Allied Topics, Vancouver, BC, Canada, May 20–24, 2012,

5. YJ Tseng*, CH Kuo, TF Tian, "An Alignment Algorithm for Comprehensive Two-dimensional Gas Chromatography-Mass Spectrometry", the 60th ASMS Conference on Mass Spectrometry and Allied Topics, Vancouver, BC, Canada, May 20–24, 2012,

6. Tseng YJ*, Tian TF, Kuo CH, " An Alignment Algorithm for Comprehensive Two-dimensional Gas Chromatography-Mass Spectrometry", 60th ASMS Conference on Mass Spectrometry and Allied Topics, Vancouver, BC, Canada, May 20 - 24, 2012

7. Yang WQ, Ho CC, Tseng YJ, Kuo CH, " Development of a Solid-Phase Microextraction Gas Chromatography Time-of-Flight Mass Spectrometry Method for Profiling Volatile Metabolic Patterns of Exhaled Breath Condensate", 60th ASMS Conference on Mass Spectrometry and Allied Topics, Vancouver, BC, Canada, May 20 - 24, 2012

8. Chang CY, Tseng YJ*, " Virtual screening the natural products for FKBP12 inhibition", 243rd ACS National Meeting & Exposition, March 25 - March 29, 2012SD

9. Tu YS, Esposito EX, Tseng YJ*, " Predictive Toxicology Modeling: Protocols for Exploring Tetrahymena Pyriformis Endpoint Predictions", 243rd ACS National Meeting & Exposition, March 25 - 29, 2012

10. Su BH, Harn YC, Tseng YJ*, " An efficient dynamic programming algorithm to predict natural product structures", 243th ACS National Meeting & Exposition, March 25 - 29, 2012

11. Jassen J, Tseng YJ, "Cornell W, Romaro R, Teach – Discover – Treat: An initiative to provide high quality computational chemistry tutorials that impact education and drug discovery for neglected diseases", 243th ACS National Meeting & Exposition, March 25 - 29, 2012

12. Chang CY, Tseng YJ*, "Virtual screening the natural products for FKBP12 inhibition", 243th ACS National Meeting & Exposition, March 25 - March 29, 2012

13. Su BH, Harn YC, Tseng YJ*, "An efficient dynamic programming algorithm to predict natural product structures", 243th ACS National Meeting & Exposition, March 25 - 29, 2012

14. Tu YS, Esposito EX, Tseng YJ*, "P redictive Toxicology Modeling: Protocols for Exploring Tetrahymena Pyriformis Endpoint Predictions", 243rd ACS National Meeting & Exposition, March 25 - 29, 2012

15. Su BH, Chen SZ, Tu YS, Tseng YJ*, "Natural products screening for alpha-glucosidase inhibitors", 42th ACS National Meeting & Exposition, Denver, 2, USA, August 28 - Sept. 1, 2011

16. Tseng Y J*, "The symposium of "Cheminformatics aspects of high throughput screening: from robots to models", (Invited Talk for special symposium) ", 42th ACS National Meeting & Exposition, Denver, 2, USA, August 28 - Sept. 1, 2011

17. Ho TJ, Tseng YJ*, " MetaPick, a denoising and peak picking algorithm for extracting single compound from complex mixtures in liquid chromatography/mass spectrometry (LC/MS) metabolomics data", 7th International Conference of the Metabolomics Society, June 27 - 30, Cairns, Australia, 2011. (Best presentation award)

18. Harn YC, Tseng YJ*, "Structure Hunter: Prediction of novel chemical structures in a mixture", 7th International Conference of the Metabolomics Society, June 27 - 30, Cairns, Australia, 2011. (Invited Talk for Technology Innovation Section)

19. Tian TF, Kuo TC, Tseng YJ*, " 3Omics: a web based systems biology visualization tool by integrating transcriptomics, proteomics and metabolomics data in human", 7th International Conference of the Metabolomics Society, June 27 - 30, Cairns, Australia, 2011. (Invited Talk for Systems Biology Section)

20. Kuo TC, Tian TF, Tseng YJ*, " HMO: Human Metabolome Ontology", 7th International Conference of the Metabolomics Society, June 27 - 30, Cairns, Australia, 2011.

21. Wang SY, Tseng YJ*, "A fast robust total abundance regression calibration to adjust sever batch effect", 7th International Conference of the Metabolomics Society, June 27 - 30, Cairns, Australia, 2011.

22. Liao HW, Kuo CH*, Tseng YJ, "Determination of posaconazole in patient plasma by field amplified sample stacking in capillary electrophoresis", Joint Congress 2011, May 1-5, 2011

23. Lin FY, Tseng YJ*, "Lead Optimization with Synthetic Accessibility", 241th ACS National Meeting & Exposition, Anaheim, March 27-31, 2011.

24. Huang YS, Su BH, Tseng YJ*, "A fragment-based de-novo design for VEGFR2/3 inhibitors", 240th ACS National Meeting & Exposition, August 22-26, 2010.

25. Lin FY, Tseng YJ*, " Structure-based fragment hopping for lead optimization using pre-docked fragment database", 240th ACS National Meeting & Exposition, August 22-26, 2010.

26. Tu YS, Su BH, Tseng YJ*, " Clustering Based Scaffold Hopping with 4D-Fingerprints", 240th ACS National Meeting & Exposition, August 22-26, 2010.

27. Wang KC, Wang SY, Tseng YJ*, "NMR Deconvolutor: A Robust Deconvolution Algorithm for Quantitative Metabolomics", 6th International Conference of the Metabolomics Society , June 27 - July 1, 2010

張瑞峰教授 Ruey-Feng Chang, Professor

※學術期刊論文 Journal articles & book chapters

1. Moon WK, Lo CM, Huang CS, Chen JH, R. F. Chang*, "Computer-aided diagnosis based on speckle patterns for ultrasound images", Ultrasound in Medicine and Biology, accepted, 2012.
2. Chang YC, Huang YH, Huang CS, Chang PK, Chen JH, R. F. Chang *, "Classification of breast mass lesions using model-based analysis of the characteristic kinetic curve derived from fuzzy c-means clustering", Magnetic Resonance Imaging, 30(4), 312-322, Apr 2012.
3. Chang YC, Yang MC, Huang CS, Chang SC, Huang GY, Moon WK, R. F. Chang *, "Automatic selection of representative slice from cine-loops of real-time sonoelastography for classifying solid breast masses", Ultrasound in Medicine and Biology, 37(5), 709-718, May 2011.
4. W.K. Moon, S.C. Chang, C.S. Huang, R. F. Chang *, "Breast tumor classification using fuzzy clustering for breast elastography", Ultrasound in Medicine and Biology, 37(5), 700-708, May 2011.
5. W.K. Moon, Y.W. Shen, C.S. Huang, L.R. Chiang, R. F. Chang *, "Computer-aided diagnosis for the classification of breast masses in automated whole breast ultrasound images", Ultrasound in Medicine and Biology, 37(4), 539-548, Apr 2011.
6. Y.C. Chang, M.C. Yang, C.S. Huang, S.C. Chang, G.Y. Huang, W.K. Moon, R. F. Chang *, "Automatic selection of representative slice from cine-loops of real-time sonoelastography for classifying solid breast masses", Ultrasound in Medicine and Biology, 37(5), 709-718, May 2011.
7. W.K. Moon, Y.W. Shen, C.S. Huang, S.C. Luo, A. Kuzucan, J.H. Chen, R. F. Chang *, "Comparative study of density analysis using automated whole breast ultrasound and MRI", Medical Physics, 38(1), 382-389, Jan 2011.
8. R. F. Chang *, K. C. Chang Chien, E. Takada, C. S. Huang, Y. H. Chou, C. M. Kuo, J. H. Chen*, 2010.05, "Rapid Image Stitching and Computer-aided Detection for Multipass Automated Breast Ultrasound", Medical Physics, 37(5), 2063-2073, May 2010.
9. R. F. Chang *, K. C. Chang Chien, E. Takada, C. S. Huang, Y. H. Chou, C. M. Kuo, J. H. Chen*, 2010.05, "Rapid Image Stitching and Computer-aided Detection for Multipass Automated Breast Ultrasound", Medical Physics, 37(5), 2063-2073, May 2010.

陳中平教授 Chung-PingChen, Professor

※學術期刊論文 Journal articles & book chapters

1. Chung, S.-Y., Wang, C.-Y., Teng, C.-H., Chen, C.-P.*, Chang, H.-C. , "Simulations of dielectric and plasmonic waveguide-coupled ring resonators using the Legendre pseudospectral time-domain method" , Journal of Lightwave Technology 30 (11) , art. no. 6157589 , pp. 1733-1742,2012

2. Liu, J.-H., Tsai, M.-F., Chen, L., Chen, C.-P.*,"Accurate and analytical statistical spatial correlation modeling based on singular value decomposition for VLSI DFM applications", IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems 29 (4) , art. no. 5433751 , pp. 580-589 ,2010
3. Yu-Shun Wang, Min-Han Hsieh, James Chien-Mo Li, and Charlie Chung-Ping Chen, "An At-speed Test Technique for High-speed High-order Adder by a 6.4-GHz 64-bit Domino Adder Example," IEEE Transactions on Circuits and Systems, TCAS-1.

※研討會論文 Conference & proceeding papers

1. Min-Han Hsieh, Bing-Feng Lin, Yu-Shun Wang, Hao-Huei Chang, and Charlie Chung-Ping Chen, "A 2 – 8 GHz Multi-Phase Distributed DLL Using Phase Insertion in 90 nm." IEEE International Symposium on Circuits and Systems (ISCAS), 2012,05.
2. Min-Han Hsieh, Liang-Hsin Chen, Shen-Iuan Liu, and Charlie Chung-Ping Chen, "A 6.7MHz-to-1.24GHz 0.0318mm2 Fast-Locking All-Digital DLL in 90nm CMOS." IEEE International Solid-State Circuits Conference (ISSCC), 2012, P.244-P.245.
3. Feipei Lai, Pei-Chun Lin, Chia-Ping Shen, Jui-Hung Kao, Jin-Ming Wu, Shih-Ting Liu, Weizhi Zhou, Hani Ousamah Jamleh, and Charlie Chen Chung-Ping ,"Telecare with Integrated Health Portal and Smart Phones," Medicine 2.0 , Boston, America, Sep. 2012
4. Yu-Shun Wang, Min-Han Hsieh, Yi-Chi Wu, Chia-Ming Liu, Hsien-Chen Chiu, Bing-Feng Lin, Charlie Chung-Ping Chen, "A 12 Gb/s Chip-to-Chip AC Coupled Transceiver." IEEE International Symposium on Circuits and Systems (ISCAS), 2011, P.1692 - P.1695.
5. Yu-Shun Wang, Min-Han Hsieh, Chia-Ming Liu, Yi-Chi Wu, Bing-Feng Lin, Hsien-Chen Chiu, Charlie Chung-Ping Chen, "A 1.2V 6.4GHz 181ps 64-bit CD domino adder with DLL measurement technique." IEEE International Symposium on Circuits and Systems (ISCAS), 2011, P.1423 - P.1426.
6. Yu-Shun Wang, Min-Han Hsieh, Chia-Ming Liu, Chi-Wei Liu, James C.-M. Li, and Charlie Chung-Ping Chen, "An at-speed self-testable technique for the high speed domino adder." IEEE Custom Integrated Circuits Conference (CICC), 2011, P.1-P.4.
7. Chia-Ping Shen, Chih-Min Chan, Feng-Sheng Lin, Ming-Jang Chiu, Jeng-Wei Lin, Jui-Hung Kao, Chung-Ping Chen and Feipei Lai, "Epileptic Seizure Detection for Multichannel EEG Signals with Support Vector Machines," 11th IEEE International Conference on Bioinformatics and Bioengineering (BIBE), Oct. 24-26, 2011, Taichung, Taiwan. (EI)
8. Yuan-Ting Wu, Pei-Chun Lin, Feng Seng Lin, Hani Ousamah Jamleh, Chia-Ping Shen, Shih-Ting Liu, Jin-Ming Wu, Charlie Chen Chung-Ping, Feipei Lai "Online Mobile ECG Measurement and Diagnosis with Cloud Computation," AMA-IEEE Medical Technology Conference, Boston, America, Oct. 2011

陳志宏教授 Jyh-Horng Chen, professor

※學術期刊論文 Journal articles & book chapters

1. CH Chou, C-M Teng, K-Y Tzen, Y-C Chang, J-H Chen and JC-H Cheng, "MMP-9 from sublethally irradiated tumor promotes Lewis lung carcinoma cell invasiveness and pulmonary metastasis", Oncogene, 2012, 31, 458–468(IF: 7.414 ; 15/185 in ONCOLOGY)
2. Lin, I.-T., Yang, H.-C., J-H Chen, "Improving the field of view and maintaining a high signal-to-noise ratio by using two high-Tc superconducting resonators in a 3T MRI", PLoS ONE, 2011. (IF: 4.411; 12/85 in BIOLOGY)
3. Lin, I.-T., Yang, H.-C., J-H Chen, "Whole Body Screening Using High-Temperature Superconducting MR Volume Coils: Mice Studies", PLoS ONE, 2011. (IF: 4.411; 12/85 in BIOLOGY)
4. Yang, P.-F., Chen, D.-Y., Hu, J.W., J-H Chen, Yen, C.-T., "Functional tracing of medial nociceptive pathways using activity-dependent manganese-enhanced MRI", Pain 2011,152(1), 194–203 .(IF:5.355, 2/26:ANESTHESIOLOGY)
5. Lin, I.-T., Yang, H.-C., J-H Chen, "Using High-Tc Superconducting Resonator for Enhancement of Diffusion Tensor Imaging", Journal of Applied Physics 2011, 109, 116103-pp. 1-3. (SCI) (IF: 2.079; 34/118 in PHYSICS, APPLIED)

6. Lin, I.-T., Yang, H.-C., J-H Chen, "A 4 cm High-Temperature Superconducting Surface Resonator in a 3 T MRI System: Simulations and Measurements", IEEE Transactions on Applied Superconductivity, 2011, vol. 21, no. 6, pp.3574 - 3580. (SCI) (IF: 1.013; 120/247 in ENGINEERING, ELECTRICAL & ELECTRONIC)

7. Chang-Wei Hsieh, Jih-Huah Wu, Chao-Hsien Hsieh, Qwa-Fun Wang, J-H Chen,"Different Brain Network Activations Induced by Modulation and Non-Modulation Laser Acupuncture", Evidence-based Complementary and Alternative Medicine 2011, Art. No. 951258(IF:2.964, 3/19:INTEGRATIVE & COMPLEMENTARY MEDICINE)

8. Yi-Chia Li, Chien-Chung Chen, J-H Chen, "Impact of Visual Repetition Rate on Intrinsic Properties of Low Frequency Fluctuations in the Visual Network", PLoS ONE 6(5): e18954. doi:10.1371/journal.pone.0018954, 2011. (IF: 4.411; 12/85 in BIOLOGY)

9. Ang Yuan, Chien-Yuan Lin, Cheng-Hung Chou, Chia-Ming Shih, Chih-Yuan Chen, Hao-Wei Cheng, Yi-Fang Chen, Jeremy J. W. Chen, J-H Chen, Pan-Chyr Yang*, Chen Chang*, "Functional and Structural Characteristics of Tumor Angiogenesis in Lung Cancers Overexpressing Different VEGF Isoforms Assessed by DCE- and SSCE-MRI", 2011, PLoS ONE, 6, 1-11. (IF: 4.411; 12/85 in BIOLOGY)

10. Mei-Yu Hsiao, Chien-Chung Chen and J-H Chen. "BrainKnowledge: A Human Brain Function Mapping Knowledge-Base System". Neuroinformatics. 2011, 9(1), 21-38. (IF:3.027, 9/97:COMPUTER SCIENCE, INTERDISCIPLINARY APPLICATIONS)

11. Tsai, C.-G., Chen, C.-C., Chou, T.-L., J-H Chen, "Neural mechanisms involved in the oral representation of percussion music: An fMRI study", Brain and Cognition, 2010, 74(2), 123-131. (IF:2.838 116/237:NEUROSCIENCES)

12. Chien-Hui Liou, Chang-Wei Hsieh, Chao-Hsien Hsieh, Der-Yow Chen, Chi-Hong Wang, J-H Chen, Si-Chen Lee, "Detection of nighttime melatonin level in Chinese Original Quiet Sitting practice", Journal of the Formosan Medical Association, 2010, 109(10), 694–701. (IF: 1.125; 76/151 in MEDICINE, GENERAL & INTERNAL)

13. Chang-wei W. Wu , Ho-Ling Liu , J-H Chen , Yihong Yang, "Effects of CBV, CBF,and blood-brain barrier permeability on accuracy of PASL and VASO measurement", Magnetic Resonance Imaging, 2010, 63(3), 601–608. (IF: 2.042; 50/111 in RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING)

14. Ju-Ton Hsieh, Shih-Ping Liu, Hong-Chiang Chang, Yuh-Chen Kuo, J-H Chen,Fu-Shan Jaw and Vincent F.S. Tsai, "Parasympathetic Influence Plays an Independent and Significant Role in Inducing the Contraction of the Seminal Vesicle of the Rat", Urology, 2010, 76(2), 511.e1-511.e4. (IF: 2.334; 26/69 in UROLOGY & NEPHROLOGY)

15. Chia-Fone Lee, Peir-Rong Chen, Wen-Jeng Lee, Yuan-Fang Chou, J-H Chen, Tien-Chen Liu, "Computer aided modeling of human mastoid cavity biomechanics using finite element analysis", EURASIP Journal on Advances in Signal Processing, 2010, Article ID 203037, 9 pages . (IF: 1.053; 118/247 in ENGINEERING, ELECTRICAL & ELECTRONIC)

16. In-Tsang Lin, Hong-Chang Yang, Chang-Wei Hsieh, Tun Jao, J-H Chen, "Human hand imaging using a 20 cm high-temperature superconducting coil in a 3T magnetic resonance imaging system", Journal of Applied Physics, 107, 124701-pp. 1- 6, June, 2010, also has been selected for the July 1, 2010 issue of Virtual Journal of Applications of Superconductivity. (SCI) (IF: 2.079; 34/118 in PHYSICS, APPLIED)

17. Yuan-Pin Lin, Chi-Hong Wang, Tzyy-Ping Jung, Tien-Lin Wu, Shyh-Kang Jeng, Jeng-Ren Duann and J-H Chen, "EEG-based Emotion Recognition in Music Listening", IEEE Transactions on Biomedical Engineering, 2010,57(7), 1798-1806. (IF: 1.79; 32/70 in ENGINEERING, BIOMEDICAL)

18. Yuan-Pin Lin, Jeng-Ren Duann, J-H Chen and Tzyy-Ping Jung, "Electroencephalographic Dynamics of Musical Emotion Perception Revealed by Independent Spectral Components", NeuroReport, 2010, 21(6), 410-415. (IF: 3.064; 10/42 in SPECTROSCOPY)

19. Wei-Hao Chang, J-H Chen and Lian-Pin Hwang, "Single-sided mobile NMR apparatus using the transverse flux of a single permanent magnet", Magnetic Resonance Imaging, 2010, 28(1), 129-38. (IF: 2.042; 50/113 in RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING)

※研討會論文 Conference & proceeding papers

1. Meng-Chi Hsieh, San-Chao Hwang, Hsu Chang, and Jyh-Horng Chen, "A Numerical Comparison of Quantitative Susceptibility Mapping Methods on Simulated Magnetic Field Maps", Proc. 20th ISMRM Ann Meeting, Melbourne, Australia, May 7-13, 2012. (Poster)

2. Yen-Liang Liu, Yun-An Huang, In-Tsang Lin, Hong-Chang Yang, and Jyh-Horng Chen, "A Brain Resting State fMRI Connectivity Study Using High-Temperature Superconducting RF Coil Platform in A 7T Rat MRI Imager", 20th ISMRM Annual Meeting, May 5-11, 2012. (Poster)

3. Chia-Wei Li, Yun-An Huang, Ya-Chih Yu, and Jyh-Horng Chen, "Functional Connectivity between Cerebellum and Cerebrum Using Singular Value Decomposition", 28th European Society for Magnetic Resonance in Medicine and Biology, October 6-8, Leipzig DE., Poster Highligh

Session, 2011.

4. Y-A. Huang, T-L. Chou, K-C Liang, J-H Chen, "Brain activation during interpersonal interaction in a competitive Tetris game under implicit and explicit conditions", 17th annual meeting of the Organization on Human Brain Mapping, 2011.
5. Pai-Feng Yang, You-Yin Chen, Ruei-Feng. Chen, Jyh-Horng Chen, Chen-Tung Yen, "Comparison of fMRI BOLD responses and c-fos activations by electrical stimulation of the ventroposterior complex and medial thalamus of the rat", 2011 Neuroscience Meeting Planner. Washington DC, CA:Society for Neuroscience, 2011.
6. I-T Lin, H-C Yang, J-H Chen, "Diffusion Tensor Imaging using High-Tc Superconducting RF surface coil for a naturally-occurring rat brain tumor", 28th ESMRMB Annual Scientific Meeting, pp. 685, Leipzig, Deutschland, October 6-8, 2011 (Poster)
7. In-Tsang Lin, Edzer L. Wu, Hong-Chang Yang, Jyh-Horng Chen, "HTS Volume Coil Enhanced SNR in Wideband Mice Whole Body Screening", Proc. 19th ISMRM Ann Meeting, Motreal, Quebec, May 7-13, 2011. (Poster)
8. In-Tsang Lin, Bing-Hsuan Lei, Hong-Chang Yang, Jyh-Horng Chen, "High-Temperature Superconducting RF Surface Coil Platform for In-Vivo Brain Structural Differences", Proc. 19th ISMRM Ann Meeting, Motreal, Quebec, May 7-13, 2011. (Poster)
9. Ning Tang, Tun Jao, Ed Bullmore, Jyh-Horng Chen, "Spontaneous Brain Oscillations Beyond Resting Brain", 2011. 17th Annual Meeting of the Organization for Human Brain Mapping (OHBM), Quebec, Canada.
10. Chia-Wei Li, Jyh-Horng Chen, "Investigation on Negative BOLD Response Using Simultaneously Recording of fMRI and EEG", Organization for Human Brain Mapping 2011, Quebec City, Canada, Poster Session.
11. Yi-Chia Li, Jyh-Horng Chen, "The Spectral Power of Brain Oscillations Predicts the Functions of Brain Networks", 19th Scientific Meeting & Exhibition of International Society for Magnetic Resonance in Medicine, Montreal, Quebec, Canada, 2011.
12. Yi-Chia Li, Jyh-Horng Chen, "Two New-discovered Functional Networks of Resting Brains", 19th Scientific Meeting & Exhibition of International Society for Magnetic Resonance in Medicine, Montreal, Quebec, Canada, 2011.
13. Chia-Ming Chang, Che-Wei Chang, Tun Jao, Chien-Chang Ho, Jyh-Horng Chen, "Automatic MNI atlas labeling for Chinese Brain Template using 3D nonlinear registration", 17th Annual Meeting of the Organization for Human Brain Mapping(OHBM), June 26-30, 2011 in Québec City, Canada (Poster)
14. In-Tsang Lin, Hong-Chang Yang, Jyh-Horng Chen, "A Long Duration High-Temperature Superconducting RF Platform", Proc. 18th ISMRM Ann Meeting, Stockholm, Sweden, May 1-7, 2010. (E-Poster)
15. Chi-Hsuan Tsou, Jie-Zhi Cheng,Jyh-Horng Chen, and Chung-Ming Chen. "Spectral Aggregation Based on Iterative Graph Cut for Sonographic Breast Image Segmentation", 5th International Workshop on Medical Imaging and Augmented Reality, Sep 2010, Beijing.
16. Chi-Hsuan Tsou, Yi-Chien Lu, Ang Yuan, Yeun-Chung Chang, and Jyh-Horng Chen, "Automatic Immunostaining Vessel Image Filtering for Visual Search Efficiency", 32st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'10), Buenos Aires, Argentina, August 31 - September 4, 2010.
17. E. L. Wu, J-H Chen, and T-D. Chiueh, "Wideband MRI: Theoretical Analysis and Its Applications", Proceedings of the 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Buenos Aires, Argentina, Aug 31-Sep 4, 2010, pp.5681.
18. Pai-Feng Yang, You-Yin Chen, Ruei-Feng Chen, Jyh-Horng Chen, Chen-Tung Yen,"Frequency-dependent BOLD responses to direct ventral lateral or media thalamic stimulation evoked functional connectivity in the rat", 2010 Neuroscience Meeting Planner. San Diego, CA:Society for Neuroscience, 2010.
19. Cheng, Y.-C., Wang, T.-T., Chen, J.-H., Lin, T.-T., "Chemical shift imaging of spatial-temporal changes of lycopene in tomatoes during ripening", American Society of Agricultural and Biological Engineers Annual International Meeting, 2010 June.
20. Yuan-Pin Lin, Julie Onton, Jyh-Horng Chen and Scott Makeig, "Identifying Informative Emotion-Related Brain Responses by Feature Selection", 16th Annual Meeting of the Organization for Human Brain Mapping (OHBM'10), Barcelona, Spain,

June 6-10, 2010.

21. Yuan-Pin Lin, Jyh-Horng Chen, Jeng-Ren Duann and Tzyy-Ping Jung, "EEG Dynamics of Musical Tempo and Mode Perception Revealed by Independent Component Analysis", 16th Annual Meeting of the Organization for Human Brain Mappin(OHBM'10),Barcelona, Spain, June 6-10, 2010.

22. Y-C. Li, J-H Chen, "Impact of visual stimulus loads on low frequency oscillations subsequent to neurovascular coupling", 16th Annual Meeting of the Organization for Human Brain Mapping, Barcelona, Spain, 2010.

23. Tun Jao, Ya-Chih Yu, I-Ning Tang, and Jyh-Horng Chen, "Eyes-open and eyes-closed affect alertness system regardless of light: An fMRI study", 16th Annual Meeting of the Organization for Human Brain Mapping, Barcelona, Spain, June, 2010.

24. Chi-Hsuan Tsou, Tun Jao, Jiann-Shing Jeng, Jyh-Horng Chen, "Detection of Abnormal Human Brain Structure from MRI using Symmetry Features", International Society for Magnetic Resonance in Medicine (ISMRM) 18th Annual Meeting & Exhibition 2010 Stockholm, May 1-7, 2010, poster presentation.

25. Tun Jao, Ya-Chih Yu, I-Ning Tang, Chang-Wei Wu, Jiann-Shing Jeng, and Jyh-Horng Chen, "Default mode network is affected incongruently by either internal or external environments", 18th ISMRM-ESMRMB Joint Annual Meeting, Stockholm, Sweden, May, 2010.

26. E. L. Wu, T-D. Chiueh, and Jyh-Horng Chen, "High resolution whole body screening using 3D Wideband MRI", ISMRM 18th Ann Meeting, Stockholm, Sweden, 2010.

27. E. L. Wu, C-T. Chen, T-D. Chiueh, and Jyh-Horng Chen, "Whole body Dynamic Contrast Enhancement study using Wideband MRI: Non-small cell lung cancer animal model", ISMRM 18th Ann Meeting, Stockholm, Sweden, 2010.

28. Pai-Feng Yang, You-Yin Chen, Jyh-Horng Chen, Chen-Tung Yen, "Functional MRI of Cortico-Striato-Thalamal Circuit Using a Novel Flexible Polyimide-Based Microelectrode Array Implanted in Rodent Deep Brain", Proc 18th ISMRM Ann Meeting, Stockholm, Sweden, 2010.

29. I-T. Lin, H-C. Yang, and Jyh-Horng Chen, "Whole Body Screening Using High-Temperature Superconducting MR Volume Coils: Mice Studies", ISMRM 18th Ann Meeting, Stockholm, Sweden, 2010.

陳永耀教授 Yung-Yaw Chen, Professor

※學術期刊論文 Journal articles & book chapters

1. S. Y. Chen, K. Y. Tsai, Ph. C. W. Ng, H. T. Ng, C. H. Liu, C. H. Fan, C. H. Kuan, Y. Y. Chen*, Y. H. Kuo, C. J. Wu, J. Y. Yen, "In-situ beam drift detection using a two-dimensional electron beam position monitor system for multiple-electron-beam–direct-write lithography", Journal of Vacuum Science & Technology B, 29(4), 041607, Aug. 2011.
2. Y. H. Kuo , C. J. Wua, J. Y. Yen, S. Y. Chen, K. Y. Tsai, and Y. Y. Chen *, "Silicon photodiodes for electron beam position and drift detection in scanning electron microscopy and electron beam lithography system", Nuclear Instruments and Methods in Physics Research, 645(1), p. 84-89, July. 2011.

※研討會論文 Conference & proceeding papers

1. C. W. Chen, Y. Y. Chen*, "Recovering Depth from a Single Image Using Spectral Energy of the Defocused Step Edge Gradient", IEEE International Conference on Image Processing (ICIP), Brussel, Belgium, pp.2021-2024, Sep. 2011.
2. C. F. Cheng, W. Li Lin, Y. Y. Chen*, "Effects of Tracking Error on Lesion Formation in High Intensity Focused Ultrasound Liver Tumor Tracking", International Symposium on Therapeutic Ultrasound, Tokyo, Japan, June 9-12, 2010.
3. K. H. Chang, M. C. Ho, C. C. Yeh, F. L. Lian, J. Y. Yen, Y. Y. Chen*, "Ultrasound Image-guided Tracking Algorithm for Moving-tumor Treatment", International Symposium on Therapeutic Ultrasound, Tokyo, Japan, June 9-12, 2010.
4. S. Y. Chen, K. Y. Tsai*, H. T. Ng, C. H. Fan, T. H. Pei, C. H. Kuan, Y. Y. Chen*, Y. H. Kuo, C. J. Wu, J. Y. Yen, "Beam Drift Detection using a Two-Dimensional Electron Beam Position Monitor System for Multiple-Electron-Beam–Direct-Write Lithography", The 54th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, P2-10 (poster), Anchorage, Alaska, USA, Jun. 2010.

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※學術期刊論文 Journal articles & book chapters

1. Chou CH, Teng CM, Tzen KY, Chang YC, Chen JH, Cheng JC*., "MMP-9 from sublethally irradiated tumor promotes Lewis lung carcinoma cell invasiveness and pulmonary metastasis",Oncogene 31:458-468, 2012 (SCI).
2. Lu YS, Chou CH, Tzen KY, Gao M, Cheng AL, Kulp SK, Cheng JC*., "Radiosensitizing effect of a phenylbutyrate-derived histone deacetylase inhibitor in hepatocellular carcinoma", International Journal of Radiation Oncology, Biology, Physics 83:e181-e189, 2012 (SCI).
3. Wu JK, Wu CJ, Cheng JC*., "Programmable segmented volumetric modulated arc therapy for respiratory coordination in pancreatic cancer", Radiotherapy and Oncology 2012 (in press) (SCI).
4. Chao HL, Chen WL, Hu CC, Wu JK, Wu CJ, Cheng JC*., "Phase-specific cone beam computed tomography reduces reconstructed volume loss of moving phantom", , Strahlentherapie und Onkologie 188;77-83, 2011 (SCI)
5. Hsu FM, Lee JM, Huang PM, Lin CC, Hsu CH, Tsai YC, Lee YC, Cheng JC*., "A retrospective analysis of outcome difference in preoperative concurrent chemoradiation with or without elective nodal irradiation for esophageal squamous cell carcinoma", International Journal of Radiation Oncology, Biology, Physics 81:e593-e599, 2011 (SCI).
6. Lo TC, Hsu FM, Chang CA, Cheng JC*., "Branched -(1,4) Glucans from Lentinula edodes (L10) in combination with radiation enhances cytotoxic effect on human lung adenocarcinoma through the Toll-like receptor 4 mediated induction of THP-1 differentiation/activation", J Agric Food Chem 59:11997-12005, 2011 (SCI).
7. Hu CC, Huang WT, Tsai CL, Wu JK, Chao HL, Huang GM, Wang CW, Wu CJ, Cheng JC*. ,"Practically acquired and modified cone-beam computed tomography images for accurate dose calculation in head and neck cancer", Strahlentherapie und Onkologie 187:633-644, 2011 (SCI).
8. Tsai CL, Wu JK, Chao HL, Tsai YC, Cheng JC*., "Treatment and dosimetric advantages between VMAT, IMRT, and helical tomotherapy in prostate cancer", Med Dosim 36:264-271, 2011 (SCI).

※研討會論文 Conference & proceeding papers

1. Cheng JC, Chou CH, Lu YS, Tzen KY, Cheng AL, "Efficacy of combining a novel histone deacetylase inhibitor with radiotherapy in hepatocellular carcinoma through inhibition of DNA repair", Proceedings of the 52nd Annual Meeting of the American Society for Therapeutic Radiology and Oncology, San Diego, U.S.A., October 31- November 4, 2010. Int J Radiat Oncol Biol Phys 2010. (Abstract) (SCI)
2. Cheng JC, Zhong-Zhe Lin, Chou Chia-Hung, Ann-Lii Cheng, "Efficacy of combining a novel Aurora kinase inhibitor with radiotherapy in orthotopic liver tumor model of hepatocellular carcinoma", Proceedings of the Translational Cancer Medicine, San Francisci, U.S.A., July 11-14, 2010. (Abstract)

邱銘章副教授 Ming-Jang Chiu,Associate professor

※學術期刊論文 Journal articles & book chapters

1. RL Yu, RM Wu, MJ Chiu, CH Tai, CH Lin, MS Hu. ,"Advanced Theory of Mind in patients at early stage of Parkinson's diseaseq Parkinsonism and Relat Disord. ",Accepted 2011. SCI
2. Cheng CM, Chiu MJ, Wang JH, Liu HC, Shyu YI, Huang GH, Chen C C-H. ,"Cognitive stimulation during hospitalization improves global cognition of older Taiwanese undergoing elective total knee and hip replacement. ",Journal of Advanced Nursing Accepted 2011. SCI
3. CC Yang, SY Yang, JJ Chieh, HE Horng, HC Yang, KH Chen, CY Hong, BY Shih, TF Chen, MJ Chiu. ," Bio-Functionalized Magnetic Nanoparticles For Specifically Detecting Bio-Markers Of Alzheimer's Disease In Vitro. ",ACS Chemical Neuroscience 2011 Accepted. SCI
4. AT Ta, SE Huang, MJ Chiu, MS Hua, WYI Tseng, SHA Chen, A Qiu. ,"Age-Related Vulnerabilities Along The Hippocampal Longitudinal Axis. ",Human Brain Mapping 2011 Sep 6 [Epub ahead of print].

5. MS Lin, MJ Chiu, YW Wu, CC Huang, CC Chao, YH Chen, HJ Lin, HY Li, YF Chen, LC Lin, YB Liu, CL Chao, WYI Tseng, MF Chen, HL Kao. ," Neurocognitive Improvement after Carotid Stenting in Patients with Chronic Internal Carotid Artery Occlusion and Cerebral Ischemia. ",Stroke 2011 August 11 [Eub ahead of print]
6. Wu YY, Cheng IH, Lee CC, Chiu MJ, Lee MJ, Chen TF, Hsu JL. ,"Clinical Phenotype of G206D Mutation in the Presenilin 1 Gene in Pathologically Confirmed Familial Alzheimer's Disease. Alzheimer's Disease. ",J Alzheimers Dis 2011; 25:145-50. SCI
7. SF Chen, MJ Chiu, JJ Su ,"Rhombencephalitis as an Initial Manifestation of Primary Sjögren's Syndrome: A Case Report and Review of the Literatures. ",Acta Neurol Taiwan 2011; 20: 35-41. EMbase /Index Medicus/Medline
8. MJ Lee, TF Chen, TW Cheng, MJ Chiu*.,"Rs5848 variant of progranulin gene is a risk of Alzheimer's disease in Taiwanese population. ",Neurodegenerativ Dis, 2011;8:216-210 SCI
9. LY Fan, MJ Chiu*,"Pharmacological Treatment for Alzheimer's disease – Current Approaches and Future Strategies. ",Acta Neurol Taiwan 2010;19:228-45. EMbase /Index Medicus/Medline
10. TF Chen, MJ Chiu,CT Huang, MC Tang, SJ Wang, CC Wang, RF S. Huang. ," Changes in dietary folate intake differentially affect oxidized lipid and mitochondrial DNA damage in various brain regions of rats in the absence/presence of intracerebroventricularly injected amyloid beta-peptide challenge. ", British J Nutr, 2011; 105:1294-13. SCI （Equal first author）
11. MJ Chiu, HE Horng, JJ Chieh, SH Liao, CH Chen, BY Shih, CC Yang, CL Lee, TF Chen, SY Yang, CY Hong, HC Yang. ,"Multi-channel SQUID-based Ultra-high-sensitivity in-vitro Detections for Bio-markers of Alzheimer's Disease via Immunomagnetic Reduction. ", IEEE Trans Appl Supercond. 2011; 21:477-480. SCI
12. Chao CC, Tseng MT, Lin YJ, Yang WS, Hsieh SC, Lin YH, Chiu MJ, Chang YC, Hsieh ST. ,"Pathophysiology of Neuropathic Pain in Type 2 Diabetes: Skin Denervation and Contact Heat Evoked Potentials. ", Diabetes Care. 2010 Sep 14. [Epub ahead of print] SCI
13. WH Chang, PF Tang, YH Wang, KH Lin, MJ Chiu, SHA Chen. ,"Role of the premotor cortex in leg selection and anticipatory postural adjustments associated with a rapid stepping task in patients with stroke. ", Gait & Posture, 2010 Aug 9 [Epub ahead of print] PMID:20702094. SCI
14. N CC Yang, MJ Lee, CC Chao, YT Chuang, WM Lin, MF Chang, PC Hsieh, HW Kan, YH Lin, CC Yang, MJ Chiu, HH Liou, ST Hsieh. ," Clinical presentations and skin denervation in amyloid neuropathy due to transthyretin Ala97Ser. ", Neurology, 2010; 75:532-538. SCI
15. JC Shan, MH. Hsieh, CM Liu, MJ Chiu, FS Jaw, HG Hwu. ," More evidence to support the role of S2 in P50 studies. ", Schizophr Res. 2010 Jun 17. [Epub ahead of print] PMID:20591267. SCI
16. Chen C CH, Chiu MJ, Chen SP, Cheng CM, Huan GH. ,"Patterns of cognitive change in elderly patients during and 6 months after hospitalization: A prospective cohort study. ", Int J Nurs Stud 2010 Apr 17 [Epub ahead of print] PMID:20403601 SCI（2/62）
17. Kwok YT, Chen CY, Chiu MJ, Tang LY, Leung KK. ,"Assessment of behavioral and psychological symptoms of dementia by family caregivers. ", Arch Gerontol Geriatr. 2010 Mar 4. [Epub ahead of print] PMID: 20207029. SCI
18. TF Chen, RFS Huang, SE Lin, MJ Chiu*. ,"Folic Acid Potentiates the Effect of Memantine on Spatial Learning and Neuronal Protection in an Alzheimer's Disease Transgenic Model. ", J Alzheimers Dis 2010; 20:607-615. SCI
19. MJ Chiu, CW Lin, CC Chen, TF Chen, YF Chen, HM Liu, CP Chu, HH Liou, MS Hua. ,"Impaired gist memory in patients with temporal lobe epilepsy and hippocampal sclerosis. ", Epilepsia 2010; 51:1036-1042. SCI

※研討會論文 Conference & proceeding papers

1. CP Shen, CM Chan, FS Lin, MJ Chiu, JW Lin, JH Kao, CP Chen and FP Lai. ,"Epileptic Seizure Detection for Multichannel EEG Signals with Support Vector Machines.", 11th IEEE International Conference on Bioinformatics & Bioengineering, Oct 24-26, 2011, Tai-Chung Taiwan
2. Shen CP, Chen WH, Chen JM, Hsu KP, Lin JW, Chiu MJ, Chen CH, Lai F. ,"Bio-signal analysis system design with support vector machines based on cloud computing service architecture. ", Conf Proc IEEE Eng Med Biol Soc. 2010: 1421-4.

周迺寬助理教授 Nai-Kuan Chou, Clinical assistant professor

※學術期刊論文 Journal articles & book chapters

1. Chi NH, Yang MC, Chung TW, Chen JY, Chou NK, Wang SS, "Cardiac repair achieved by bone marrow mesenchymal stem cells/silk fibroin/

hyaluronic acid patches in a rat of myocardial infarction model", Biomaterials 2012 May 8. [Epub ahead of print]

2. Luo JM, Chou NK, Chen YS, Huang SC, Chi NH, Yu HY, Ko WJ, Wang SS, "Heart retransplantation for pediatric primary allograft failure", Transplant Proc, 44(4), 913-4, May 2012.
3. Chen YC, Chuang MK, Chou NK, Chi NH, Wu IH, Chen YS, Yu HY, Huang SC, Wang CH, Tsao CI, Ko WJ, Wang SS, "Twenty-four Year Single-Center Experience of Hepatitis B Virus Infection in Heart Transplantation", Transplant Proc, 44(4), 910-2, May 2012.
4. Wang SS, Chou NK, Chi NH, Huang SC, Wu IH, Wang CH, Yu HY, Chen YS, Tsao CI, Ko WJ, Shun CT, "Clinical experience of tacrolimus with everolimus in heart transplantation", Transplant Proc, 44(4), 907-9, May 2012.
5. Chang TI, Chi NH, Chou NK, Tsao CI, Yu HY, Chen YS, Wang SS, "Isolated cardiac sarcoidosis in heart transplantation", Transplant Proc, 44(4), 903-6, May 2012.
6. Chou HW, Chi NH, Lin MH, Chou NK, Tsao CI, Yu HY, Chen YS, Wang SS, "Steroid pulse therapy combined with plasmapheresis for clinically compromised patients after heart transplantation", Transplant Proc, 44(4), 900-2, May 2012.
7. Chou NK, Jan CF, Chi NH, Lee CM, Wu IH, Huang SC, Chen YS, Yu HY, Tsao CI, Ko WJ, Chu SH, Wang SS, "Cardiac allograft vasculopathy compared by intravascular ultrasound sonography: everolimus to mycophenolate mofetil-one single-center experience", Transplant Proc, 44(4), 897-9, May 2012.
8. Chi NH, Chou NK, Tsao CI, Huang SC, Wu IH, Yu HY, Chen YS, Wang SS, "Endomyocardial biopsy in heart transplantation: schedule or event?", Transplant Proc, 44(4), 894-6, May 2012.
9. Lin MH, Chou NK, Chi NH, Chen YS, Yu HY, Huang SC, Ko WJ, Chou HW, Wang SS, "The outcome of heart transplantation in hepatitis C-positive recipients", Transplant Proc, 44(4), 890-3, May 2012.
10. Tsao CI, Chou NK, Chi NH, Chen SC, Ko WJ, Yu HY, Chen YS, Wang SS, "The Influence of the Organ Allocation Policy on a Patient's Chances of Undergoing Heart Transplantation and the Posttransplantation Survival Rate", Transplant Proc, 44(4), 881-2, May 2012.
11. Chou NK, Luo JM, Chi NH, Wu IH, Huang SC, Chen YS, Yu HY, Tsao CI, Ko WJ, Chu SH, Wang SS, "Extracorporeal membrane oxygenation and thoratec pneumatic ventricular assist devices as double bridge to heart transplantation", Transplant Proc, 44(4), 878-80, May 2012.
12. Chiu HH, Wu MH, Wang SS, Lan C, Chou NK, Chen SY, Lai JS, "Cardiorespiratory Function of Pediatric Heart Transplant Recipients in the Early Postoperative Period", Am J Phys Med Rehabil, 91(2), 156-161, Feb 2012.
13. Hsu CJ, Chen SY, Su S, Yang MC, Lan C, Chou NK, Hsu RB, Lai JS, Wang SS, "The effect of early cardiac rehabilitation on health-related quality of life among heart transplant recipients and patients with coronary artery bypass graft surgery", Transplant Proc, 43(7), 2714-7, Sep 2011.
14. Chou YH, Huang TM, Wu VC, Wang CY, Shiao CC, Lai CF, Tsai HB, Chao CT, Young GH, Wang WJ, Kao TW, Lin SL, Han YY, Chou A, Lin TH, Yang YW, Chen YM, Tsai PR, Lin YF, Huang JW, Chiang WC, Chou NK, Ko WJ, Wu KD, Tsai TJ, Nsarf Study Group T, "Impact of timing of renal replacement therapy initiation on outcome of septic acute kidney injury", Crit Care, 15(3), R134, Jun 6 2011.
15. Huang TM, Wu VC, Young GH, Lin YF, Shiao CC, Wu PC, Li WY, Yu HY, Hu FC, Lin JW, Chen YS, Lin YH, Wang SS, Hsu RB, Chang FC, Chou NK, Chu TS, Yeh YC, Tsai PR, Huang JW, Lin SL, Chen YM, Ko WJ, Wu KD; National Taiwan University Hospital Study Group of Acute Renal Failure, "Preoperative proteinuria predicts adverse renal outcomes after coronary artery bypass grafting", J Am Soc Nephrol, 22(1), 156-63, Jan 2011.
16. Wu VC, Tsai HB, Yeh YC, Huang TM, Lin YF, Chou NK, Chen YS, Han YY, Chou A, Lin YH, Wu MS, Lin SL, Chen YM, Tsai PR, Ko WJ, Wu KD; NSARF Study Group, "Patients supported by extracorporeal membrane oxygenation and acute dialysis: acute physiology and chronic health evaluation score in predicting hospital mortality", Artif Organs, 34(10), 828-35, Oct 2010.
17. Lin JM, Lai LP, Lin CS, Chou NK, Chiu CY, Lin JL, "Left Ventricular Extracellular Matrix Remodeling in Dogs with Right Ventricular Apical Pacing", J Cardiovasc Electrophysiol, 21(10), 1142-1149, Oct 2010.
18. Y. H. Lin, K. H. Liao, C. K. Huang, N. K. Chou, S. S. Wang, S. H. Chu, and K. H. Hsieh, "Superhydrophobic Film of UV-curable

Fluorinated Epoxy Acrylate Resins", Polymer International, 59(9), 1205-1211, Sep 2010 (Subject categories: POLYMER SCIENCE).

19. Lin JM, Lai LP, Chou NK, Lin JL, "Spatial Heterogeneity of Protein Expression Induced by Dyssynchronous Right Ventricular Pacing in the Left Ventricle of Dogs with Preserved Systolic Function. Journal of Cardiac Failure", 16(8), 700-706, Aug 2010.

20. Lin JW, Wang MJ, Yu HY, Wang CH, Chang WT, Jerng JS, Huang SC, Chou NK, Chi NH, Ko WJ, Wang YC, Wang SS, Hwang JJ, Lin FY, Chen YS, "Comparing the survival between extracorporeal rescue and conventional resuscitation in adult in-hospital cardiac arrests: propensity analysis of three-year data", Resuscitation, 81(7), 796-803, Jul 2010. Epub 2010 Apr 21.

21. Chung JC, Tsai PR, Chou NK, Chi NH, Wang SS, Ko WJ, "Extracorporeal Membrane Oxygenation Bridge to Adult Heart Ttransplantation", Clin Transplant, 24(3), 375-80, May 1 2010.

22. Hsu RB, Chang CI, Tsai MK, Lee PH, Chou NK, Chi NH, Wang SS, Chu SH, "Low incidence of malignancy in heart-transplant recipients in Taiwan: an update and comparison with kidney-transplant recipients", European Journal of Cardio-Thoracic Surgery, 37(5), 1117-1121, May 2010.

23. N.K. Chou, N.H. Chi, I.W. Wu, S.C. Huang, Y.S. Chen, H.Y. Yu, C.I. Tsao, W.J. Ko, H.Y. Sun, S.C. Chang, S.H. Chu, S.S. Wang, "Fungal Infection in Heart Transplant Recipients with Severe Sepsis: Single-Center Experience", Transplant Proc, 42(3), 952-954, April 2010.

24. Y.C. Chen, N.K. Chou, R.B. Hsu, N.H. Chi, I.H. Wu, Y.S. Chen, H.Y. Yu, S.C. Huang, C.H. Wang, C.I. Tsao, W.J. Ko, S.S. Wang, "End-Stage Renal Disease after Orthotopic Heart Transplantation: A Single-Institute Experience", Transplant Proc, 42(3), 948-951, April 2010.

25. C.-I. Tsao, N.-K. Chou, N.-H. Chi, H.-Y. Yu, Y.-S. Chen, C.-H. Wang, W.-J. Ko, S.-C. Chen, S.-S. Wang, "Unplanned Readmission within 1 Year after Heart Transplantation in Taiwan", Transplant Proc, 42(3), 946-947, April 2010.

26. N.K. Chou, N.H. Chi, I.W. Wu, S.C. Huang, Y.S. Chen, H.Y. Yu, C.I. Tsao, W.J. Ko, S.H. Chu, S.S. Wang, "Extracoporeal Membrane Oxygenation to Rescue Cardiopulmonary Failure after Heart Transplantation: A Single-Center Experience", Transplant Proc, 42(3), 943-945, April 2010.

27. S.-S. Wang, N.-K. Chou, N.-H. Chi, S.-C. Huang, I.-H. Wu, C.-H. Wang, H.-Y. Yu, Y.-S. Chen, C.-I. Tsao, W.-J. Ko, C.-T. Shun, "The Survival of Heart Transplant Recipients Using Cyclosporine and Everolimus Is Not Inferior to That Using Cyclosporine and Mycophenolate", Transplant Proc, 42(3), 938-939, April 2010.

28. K.H. Hsu, N.K. Chou, M.K. Tsai, N.H. Chi, Y.S. Chen, H.Y. Yu, C.H. Wang, W.J. Ko, C.I. Tsao, P.H. Lee, S.S. Wang, "Combined Sirolimus–Calcineurin Inhibitor Immunosuppressive Therapy in Simultaneous Heart and Kidney Transplantation: A Retrospective Analysis of a Single Hospital's Experience", Transplant Proc, 42(3), 934-937, April 2010.

29. S.-S. Wang, N.-K. Chou, N.-H. Chi, S.-C. Huang, I.-H. Wu, C.-H. Wang, H.-Y. Yu, Y.-S. Chen, C.-I. Tsao, W.-J. Ko, C.-T. Shun, "Can Cyclosporine Blood Level Be Reduced to Half After Heart Transplantation? ", Transplant Proc, 42(3), 930-933, April 2010.

30. J.-M. Luo, N.-K. Chou, N.-H. Chi, Y.-S. Chen, H.-Y. Yu, C.-H. Wang, W.-J. Ko, C.-I. Tsao, C.-D. Sun, S.-S. Wang, "Heart Transplantation in Patients with Amyloidosis", Transplant Proc, 42(3), 927-929, April 2010.

31. N.K. Chou, N.H. Chi, I.W. Wu, S.C. Huang, Y.S. Chen, H.Y. Yu, C.I. Tsao, W.J. Ko, S.H. Chu, S.S. Wang, "Extracoporeal Membrane Oxygenation Hybrid with Thoratec Ventricular-Assist Devices as Double Bridge to Heart Transplantation", Transplant Proc, 42(3), 920-922, April 2010.

32. M.H. Lin, N.K. Chou, Y.S. Chen, N.H. Chi, W.J. Ko, H.Y. Yu, S.C. Huang, N.T. Wu, J.K. Wang, M.H. Wu, S.S. Wang, "Outcome in Children Bridged and Nonbridged to Cardiac Transplantation", Transplant Proc, 42(3), 916-919, April 2010.

33. J. M. Luo, N.K. Chou, N. H. Chi, Y. S. Chen, H. Y. Yu, C. H. Wang, W. J. Ko, C. I. Tsao, C. D. Sun, S. S. Wang, "Pediatric Heart Transplantation Bridged With Ventricular Assist Devices", Transplant Proc, 42(3), 913-915, April 2010.

34. Yang MC, Chi NH, Chou NK, Huang YY, Chung TW, Chang YL, Liu HC, Shieh MJ, Wang SS, "The influence of rat mesenchymal stem cell CD44 surface markers on cell growth, fibronectin expression, and cardiomyogenic differentiation on silk fibroin - Hyaluronic acid cardiac patches", Biomaterials, 31(5), 854-62, Feb 2010. Epub 2009 Oct 25.

35. Hsu RB, Chang CI, Tsai MK, Lee PH, Chou NK, Chi NH, Wang SS, Chu SH, "Effect of simultaneous kidney transplantation on heart-transplantation outcome in recipients with preoperative renal dysfunction", Eur J Cardiothorac Surg, 37(1), 68-73, Jan 2010.

傅楸善教授 Chiou-Shann Fuh, Professor

※學術期刊論文 Journal articles & book chapters

1. C. C. Hsieh, Y. P. Huang, Y. Y. Chen, and C. S. Fuh, "Video Super-Resolution by Motion Compensated Iterative Back-Projection Approach", Journal of Information Science and Engineering, 27(3), 1107-1122, 2011. SCI Expanded 0.202 (Computer Science, Information Systems 89/92), EI
2. C. S. Fuh (Editor), Images & Recognition, 17(1), 2011.
3. C. W. Hsu, C. S. Fuh, and Y. L. Tsai, "Pressure-Sensitive Touch Panel with Camera", Images & Recognition, 17(1), 50-68, 2011.
4. C. Y. Chen, S. T. Chen, C. S. Fuh, H. F. Juan, and H. C. Huang, "Coregulation of Transcription Factors and Micrornas in Human Transcriptional Regulatory Network", BMC Bioinformatics, 12, Suppl. 1, S41, pp. 1-10, 2011. SCI 3.428 (2009: Mathematical & Computational Biology 4/29)
5. K. L. Kuo and C. S. Fuh, "A Rule-Based Clinical Decision Model to Support Interpretation of Multiple Data in Health Examinations", Journal of Medical Systems, 35(6), 1359-1373, 2011. SCI 0.450 (Medical Informatics 19/20)
6. Y. Y. Lin, T. L. Liu, and C. S. Fuh, "Multiple Kernel Learning for Dimensionality Reduction", IEEE Transactions on Pattern Analysis and Machine Intelligence, 33(6), 1147-1160, 2011. SCI 4.378 (Computer Science, Artificial Intelligence 3/102), EI
7. K. L. Chung, W. J. Yang, P. Y. Chen, W. M. Yan, and C. S. Fuh, "New Joint Demosaicing and Arbitrary-Ratio Resizing Algorithm for Color Filter Array Based on DCT Approach", IEEE Transactions on Consumer Electronics, 56(2), 783-791, 2010. SCI 0.985 (Engineering, Electrical & Electronic 121/229), EI, NSC 98-2221-E-011-102-MY3
8. K. L. Kuo and C. S. Fuh, "A Health Examination System Integrated with Clinical Decision Support System", Journal of Medical Systems, 34, 829-842, 2010. SCI 0.450 (Medical Informatics 19/20)
9. L. C. Chiu andC. S. Fuh, "An Efficient Auto Focus Method for Digital Still Camera Based on Focus Value Curve Prediction Model", Journal of Information Science and Engineering, 26(4), 1261-1272, 2010. SCI Expanded 0.202 (Computer Science, Information Systems 89/92), EI, NSC 95-2221-E-002-276-MY3
10. L. C. Chiu and C. S. Fuh, "Calibration-Based Auto White Balance Method for Digital Still Camera", Journal of Information Science and Engineering, 26(2), 713-723, 2010. SCI Expanded 0.202 (Computer Science, Information Systems 89/92), EI, NSC 95-2221-E-002-276-MY3
11. L. C. Chiu and C. S. Fuh, "Dynamic Color Restoration Method in Real Time Image System Equipped with Digital Image Sensors", Journal of the Chinese Institute of Engineers, 33(2), 243-250, 2010. SCI Expanded 0.219 (2009: Engineering, Multidisciplinary 62/79), EI

※研討會論文 Conference & proceeding papers

1. C. W. Chen, C. T. Lin, Y. L. Sung, and C. S. Fuh, "Defocus Magnification with CUDA", Proceedings of IPPR Conference on Computer Vision, Graphics, and Image Processing, Chia-Yi, Taiwan, A4-5, pp.1-7, 2011.
2. C. Y. Chen, S. T. Chen, C. S. Fuh, H. F. Juan, H. C. Huang, "Coregulation of Transcription Factors and MicroRNAs in Human Transcriptional Regulatory Network", Proceedings of Asia Pacific Bioinformatics Conference, Incheon, Korea, pp. 1-23, 2011.
3. J. M. Wang, S. W. Chen, and C. S. Fuh, "Extracting Driver's Facial Features During Driving", Proceedings of International IEEE Conference on Intelligent Transportation Systems, Washington, DC, FB2.6,paper# 144, pp. 1-6, 2011.
4. W. H. Chen and C. S. Fuh, "Color Interpolation for Cross-Talk Noise Reduction", Proceedings of IPPR Conference on Computer Vision, Graphics, and Image Processing, Chia-Yi, Taiwan, A6-1, pp. 1-8, 2011.
5. C. K. Liaw, R. S. Yang, S. M. Hou, T. Y. Wu, and C. S. Fuh, "A Mathematical Standardized Measurement of Acetabulum Anteversion after Total Hip Arthroplasty", Proceedings of Annual Meeting of Israeli Orthopedic Association, Jerusalem, Israel, p. 16, 2010.
6. C. K. Liaw, T. Y. Wu, R. S. Yang, C. S. Fuh, and S. M. Hou, "THR Simulator - the Software for Generating Radiographs of THR Prosthesis", Proceedings of Annual Meeting of Israeli Orthopedic Association, Jerusalem, Israel, p. 28, 2010.

7. C. K. Liaw, T. Y. Wu, R. S. Yang, S. M. Hou, and C. S. Fuh, "A Simplified Guide Ruler for Rotational Osteotomy", Proceedings of Annual Meeting of Israeli Orthopedic Association, Jerusalem, Israel, p. 12, 2010.
8. C. W. Chen, D. Y. Huang, and C. S. Fuh, "Automatic Skin Color Beautification", Proceedings of ArtsIT, Ilan, Taiwan, pp. 157-164, 2010.
9. D. Y. Huang andC. S. Fuh, "Face Beautification and Color Enhancement with Scene Mode Detection", Proceedings of IPPR Conference on Computer Vision, Graphics, and Image Processing, Kaohsiung, Taiwan, A2-1-0040, p. 63, 2010.
10. H. P. Chou, J. M. Wang, C. S. Fuh, S. C. Lin, and S. W. Chen, "Automated Lecture Recording System", Proceedings of International Conference on System Science and Engineering, Taipei, Taiwan, pp. 167-172, 2010.
11. W. H. Chen and C. S. Fuh, "Noise Reduction in Raw Data Domain", Proceedings of IPPR Conference on Computer Vision, Graphics, and Image Processing, Kaohsiung, Taiwan, A2-2-0103, p. 63, 2010.
12. Y. Y. Lin and C. S. Fuh, "Multimodal Kernel Learning for Image Retrieval", Proceedings of International Conference on System Science and Engineering, Taipei, Taiwan, pp. 155-160, 2010.
13. Y. Y. Lin, T. L. Liu, and C. S. Fuh, "Clustering Complex Data with Group-Dependent Feature Selection", Proceedings of European Conference on Computer Vision, Crete, Greece, also Lecture Note on Computer Science, LNCS 6316, pp. 84-97, 2010.

※專書 Books

1. C. W. Chen and C. S. Fuh, "Lens Shading Correction for Dirt Detection", Ed. P. S. P. Wang, Pattern Recognition, Machine Intelligence and Biometrics, Springer, Heidelberg, Chapter 7, pp. 171-195, 2011.
2. J. M. Wang, W. Y. Liao, S. W. Chen, and C. S. Fuh, "Multi-View People Counting System–Pedestrian Representation", Ed. P. S. P. Wang, Pattern Recognition and Machine Vision, River Publishers, Wharton, Texas, Chapter 18, pp. 277-292, 2010.

阮雪芬教授 Hsueh-Fen Juan, Professor

※學術期刊論文 Journal articles & book chapters

1. Shih, Y.-Y., Nakagawara, A., Lee, H., Juan, H.-F., Jeng, Y.-M., Lin, D.-T., Yang, Y.-L., Tsay, Y.-G., Huang, M.-C., Pan, C.-Y. *, Hsu, W.-M.*, and Liao, Y.-F.*, "Calreticulin mediates nerve growth factor-induced neuronal differentiation", Journal of Molecular Neuroscience (accepted). (SCI)
2. Lin, L.-L., Huang, H.-C.* and Juan, H.-F.*, "Discovery of biomarkers for gastric cancer: a proteomics approach", Journal of Proteomics (In press). (SCI)
3. Chang, M.-W., Lo, J.-M., Juan, H.-F., H.-Y. Chang, Chuang, C.-Y., "Combination of RGD Compound and Low-Dose Paclitaxel Induces Apoptosis in Human Glioblastoma Cells", PLoS ONE 7(5):e37935, 2012. (SCI)
4. Tseng, C.-W., Huang, H.-C., Shih, A. C.-C., Chang, Y.-Y., Hsu, C. C., Chang, J.-Y., Li, W.-H.* and Juan, H.-F.*, "Revealing the anti-tumor effect of artificial miRNA p-27-5p on human breast carcinoma cell line T-47D", International Journal of Molecular Sciences 13, 6352-6369, 2012. (SCI)
5. Lin, C.-C., Chen, Y.-J., Chen, C.-Y., Oyang, Y.-J., Juan, H.-F.* and Huang, H.-C.*, "Crosstalk between transcription factors and microRNAs in human protein interaction network", BMC Systems Biology 6(1):18, 2012. (SCI)
6. Hu, C.-W., Chang, Y.-L., Chen, S. J., Kuo-Huang, L.-L., Liao, J. C., Huang, H.-C.*, Juan, H.-F.*, "Revealing the functions of the transketolase enzyme isoforms in Rhodopseudomonas palustris using a systems biology approach",PLoS ONE 6:e28329, 2011. (SCI)
7. Huang, T.-C., Chang, H.-Y., Chen, C.-Y., Wu, P.-Y., Lee, H., Liao, Y.-F., Hsu, W.-M.*, Huang, H.-C.*, Juan, H.-F.*, "Silencing of miR-124 induces neuroblastoma SK-N-SH cell differentiation, cell cycle arrest and apoptosis through promoting AHR",FEBS Letters 585, 3582-3586, 2011. (SCI)
8. Tsai, S.-R.#, Huang, T.-C.#, Liang, C.-M., Chang, H.-Y., Chang, Y.-T., Huang, H.-C., Juan, H.-F.*, Lee, S.-C.*, "The effect of narrow bandwidth infrared radiation on the growth of Escherichia coli",Applied Physics Letters 99, 163704, 2011. (# equal contribution) (SCI)
9. Shih, Y.-Y., Pan, C,-Y, Lee, H., Juan, H.-F., A. Nakagawara, Clagett-Dame, M., Tsay, Y.-G., Hsieh, F.-J., Hsu, W.-M.*, Liao, Y.-F. *, "Nuclear GRP75 binds retinoic acid receptors to promote neuronal differentiation of neuroblastoma", PLoS ONE 6(10), e26236, 2011. (SCI)
10. Chen, S.-T., Jeng, Y.-M., Chang, C.-C., Chang, H.-H., Huang, M.-C., Juan, H.-F., Hsu, C.-H., Lee, H.-Y., Liao, Y.-F, Lee, Y.-L., Hsu, W.-M.*, Lai, H.-S.*, "Insulin-like growth factor II mRNA-binding protein 3 expression predicts unfavorable prognosis in patients with neuroblastoma",Cancer

Science 102:2191-2198, 2011. (SCI)

11. Lee, C.-H., Huang, H.-C.*, Juan, H.-F.*, "Reviewing ligand-based rational drug design: the search for an ATP synthase inhibitor", International Journal of Molecular Sciences 12, 5304-5318, 2011. (SCI)
12. Chen, C.-M., Lin, C.-H., Juan, H.-F., Hu, F.-J., Hsiao, Y.-C., Chang, H.-Y., Chao, C.-Y., Chen, I.-C., Lee, L.-C., Wang, T.-W., Chen, Y.-T., Chen, Y.-T., Lee-Chen, G.-J.*, Wu, Y.-R., "ATP13A2 variability in Taiwanese Parkinson's disease", Am J Med Genet B Neuropsychiatr Genet, 156, 720-729, 2011. (SCI)
13. Tseng, C.-W., Lin, C.-C., Chen, C.-N.*, Huang, H.-C.*, Juan, H.-F.*, "Integrative network analysis reveals active microRNAs and their functions in gastric cancer", BMC Systems Biology 5, 99, 2011. (Highly accessed) (SCI)
14. Tseng, C.-W., Yang, J.-C., Chen, C.-N.*, Huang, H.-C., Chuang, K.-N., Lin, C.-C., Lai, H.-S., Lee, P.-H., Chang, K.-J., Juan, H.-F.*, "Identification of 14-3-3β in human gastric cancer cells and its potency as a diagnostic and prognostic biomarker", Proteomics 11:2423-2439, 2011. (SCI)
15. Chen, C.-Y., Chen, S.-T., Fuh, C.-S., Juan, H.-F.*, Huang H.-C.*, "Coregulation of Transcription Factors and microRNAs in Transcriptional Regulatory Network", BMC Bioinformatics 12 (Suppl 1):S41, 2011. (SCI)
16. Chen, J.-Y., Huang, S.-M., Tang, Y.-A., Juan, H.-F., Wu, L.-W., Sun, Y.-C., Wang, S.-C., Wu, K. W., Balraj, G., Chang, T.-T., Li, W.-S.*, Cheng, H.-C.*, Wang, Y.-C.*, "A novel sialyltransferase inhibitor suppresses FAK/paxillin and angiogenesis signaling and cancer metastasis", Cancer Research 71:473-483, 2011. (SCI)
17. Lin, C.-C., Hsiang, J.-T., Wu, C.-Y., Oyang, Y.-J., Juan, H.-F.*, Huang H.-C.*, "Dynamic functional modules in co-expressed protein interaction networks of dilated cardiomyopathy", BMC Systems Biology 4, 138, 2010. (SCI)
18. Chang, H.-H., Lee, H.-Y., Hu, M.-K., Tsao, P.-N., Juan, H.-F, Huang, M.-C., Shih, Y.-Y., Wang, B.-J., Jeng, Y.-M., Chang, C., Huang, S.-F., Y.-G. Tsay, Hsieh, F.-J., Lin, K.-H.*, Hsu, W.-M.*, and Liao, Y.-F*, "Notch1 expression predicts an unfavorable prognosis and serves as a therapeutic target of patients with neuroblastoma", Clinical Cancer Research 16, 4411-4420, 2010. (SCI)

※研討會論文 Conference & proceeding papers

1. Hu, C.-W., Cheng, C.-C., Chiu, W.-C., Ishihama, Y., Huang, H.-C., Juan, H.-F.*, "Quantitative phospho-proteomics to investigate the signaling pathways by targeting membrane protein ATP synthase", (Abstract# P6-017) The 17th Biophysics Conference, Taipei, Taiwan, May 23-25 2012.
2. Tsai, H.-T., Chang, H.-Y., Chen, C.-S., Hsu, C.-H., Huang, H.-C., Juan, H.-F.*, "Revealing Novel Interacting Proteins of ATP Synthase by Human Proteome Microarray", (Abstract#P750) The 27th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 17-18 2012.
3. Ko, S.-Y., Hu, C.-W., Huang, H.-C., Juan, H.-F.*, "Brassinosteroid-Regulated Phosphoproteome in Arabidopsis thaliana", (Abstract#P919) The 27th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 17-18, 2012.
4. Tseng, C.-W., Chien, C.-W., Lin, C.-C., Chen, Y.-J., Lee, S.-J., Huang, H.-C., Juan, H.-F.*, "Revealing New Function of miR-148a Using Quantitative Proteomics Technique", (Abstract#P920) The 27th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 17-18, 2012.
5. Chang, H.-Y., Huang, H.-C., Juan, H.-F.*, "Targeting ecto-ATP synthase Induces Unfolded Protein Response, Cell Cycle Arrest and Gwowth Inhibition in Lung Cancer", (Abstract#P-1124) 70th Annual Meeting of the Japanese Cancer Association, Nagoya, Octoctber 3-5, 2011. (Grand Award)
6. Huang, T.-C., Chang, H.-Y., Chen, C.-Y., Wu, P.-Y., Lee, H., Liao, Y.-F., Hsu, W.-M.*, Huang, H.-C.*, Juan, H.-F.*, "Silencing of miR-124 induces neuroblastoma SK-N-SH cell differentiation, cell cycle arrest and apoptosis through promoting AHR", (Abstract#P-1159) 70th Annual Meeting of the Japanese Cancer Association, Nagoya, Octoctber 3-5, 2011.
7. Kuo, T.-C., Lin, C.-C., Juan, H.-F., Huang, H.-C.*, "Finding Metastasis-related Functional Modules in Protein Interaction Network of Breast Cancer", The 9th Symposium on Bioinformatics and Systems Biology in Taiwan (BIT2011), Taipei, Taiwan, September 28-30, 2011. (Poster Award)
8. Lin, C.-C., Juan, H.-F., Oyang, Y.-J., Fuh, C.-S., Huang, H.-C.*, "Link clustering reveals biological contexts and functional modules in genetic interaction network of Saccharomyces cerevisiae", The 9th Symposium on Bioinformatics and Systems Biology in Taiwan (BIT2011), Taipei, Taiwan, September 28-30, 2011. (Poster Award)

9. Liao, H.-H., Lin, C.-C., Juan, H.-F., Huang, H.-C.*, "Integrative network analysis for defective microRNA-regulated functions in hepatocellular carcinoma", The 9th Symposium on Bioinformatics and Systems Biology in Taiwan (BIT2011), Taipei, Taiwan, September 28-30, 2011. (Poster Award)

10. Wang, H.-K., Takeuchi, R., Nakayashiki, T., Mori, H., Huang, H.-C., Juan, H.-F.*, "Genome-wide analysis of exogenous 1-butanol stress in Escherichia coli", (Abstract#P3-014) The 16th Biophysics Conference, Hualien, Taiwan, May 18-21, 2011. (The 3rd prize)

11. Wu, Y.-H., Hu, C.-W., Chang, H.-Y., Huang, H.-C., Juan, H.-F.*, "The Mechanisms Underlying Anti-Cancer Effects of ATP Synthase Inhibitor in Lung Tumor Xenograft Model", 2011 Translational Medicine Conference and Taiwan Proteomics Society Annual Symposium, Taipei, Taiwan, April 27-28, 2011. (Poster Award)

12. Tseng, C.-W., Lin, C.-C., Chuang, K.-N., Chen, C.-N., Huang, H.-C., Juan, H.-F.*, "MicroRNA-148a Suppresses Cell Metastasis through Targeting 14-3-3β in Gastric Cancer", 2011 Translational Medicine Conference and Taiwan Proteomics Society Annual Symposium, Taipei, Taiwan, April 27-28, 2011. (Poster Award)

13. Chuang, K.-N., Tseng, C.-W., Lin, C.-C., Chen, C.-N., Huang, H.-C., Juan, H.-F.*, "Elucidating the Role of 14-3-3B in Gastric Cancer Cells Using Proteomics and Network Analysis", (Abstract#P205) 26th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 19-20, 2011. (Poster Award)

14. Chen, N.-N., Chang, H.-Y., Chen, Y.-J., Huang, H.-C., Juan, H.-F.*, "Elucidating the Molecular Mechanism of ATP Synthase Inhibitor Citreoviridin on Anti-Proliferative Activity of Breast Cancer Cells", (Abstract#P206) 26th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 19-20, 2011.

15. Wang, H.-K., Takeuchi, R., Nakayashiki, T., Mori, H., Huang, H.-C., Juan, H.-F.*, "Study of Exogenous 1-Butanol Stress on Escherichia Coli Using Genome-Wide Approach", (Abstract#P207) 26th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 19-20, 2011.

16. Wu, C.-C., Chen, H.-J., Hsieh, H.-L., Huang, H.-C., Juan, H.-F *, "The Role of Brassinosteroid-Regulated miR395a in Arabidopsis thaliana", (Abstract#P208) 26th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 19-20, 2011.

17. Yeh, T.-W., Chen, C.-Y., Juan, H.-F., Huang, H.-C.*, "Characteristics of MicroRNA Regulation in Transcription Network Hierarchy", (Abstract#P174) 26th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 19-20, 2011.

18. Kuo, T.-C., Lin, C.-C., Juan, H.-F., Huang, H.-C.*, "Finding Metastasis-related Functional Modules in Protein Interaction Network of Breast Cancer", (Abstract#P199) 26th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 19-20, 2011.

19. Tseng, C.-W., Lin, C.-C., Huang, H.-C., Chen, C.-N., Juan, H.-F.*, "Integrative network analysis reveals active microRNA and their functions in gastric cancer", (Abstract#O3, Oral Presentation) The Taiwan Society for Biochemistry and Molecular Biology: Beigang Autumn Camp, Nantou, Taiwan, November 11-13, 2010.

20. Lin, L.-L., Huang, H.-C., S., Ogihara, Wang, J.-T., Chen, C.-N., Juan, H.-F.*, "Membrane repair against H. pylori promotes cancer cell proliferation", (Abstract#O17, Oral Presentation) The Taiwan Society for Biochemistry and Molecular Biology: Beigang Autumn Camp, Nantou, Taiwan, November 11-13, 2010.

21. Wu, W.-L., Chang, J.-Y., Huang, H.-C., Juan, H.-F., Wu, S.-H.*, "Genome sequencing and feather-degrading ability of Meiothermus Taiwanensis", (Abstract#O17, Oral Presentation) The Taiwan Society for Biochemistry and Molecular Biology: Beigang Autumn Camp, Nantou, Taiwan, November 11-13, 2010.

22. Chang, H.-Y., Huang, T.-C., Huang, H.-C., Wang, Y.-C., Juan, H.-F.*, "Ecto-ATP synthase, an efficient therapeutic biomarker in non-small cell lung cancer (NSCLC)", (Abstract#P9) The Taiwan Society for Biochemistry and Molecular Biology: Beigang Autumn Camp, Nantou, Taiwan, November 11-13, 2010. (Poster Award)

23. Huang, T.-C., Chen, C.-Y., Hsu, W.-M., Huang, H.-C., Juan, H.-F.*, "The impact of miR-124 on neuroblastoma cell differentiation", (Abstract#P53) The Taiwan Society for Biochemistry and Molecular Biology: Beigang Autumn Camp, Nantou, Taiwan, November 11-13, 2010.

24. Lin, M.-H., Yi, T.-H., Huang, H.-C., Wu, S.-H., Juan, H.-F.*, "Phosphoproteome of rhodopseudomonas palustris indicates threonine phosphorylation of pyruvate phosphate dikinase affecting the biofeul production and carbon fixation", (Abstract#P8) The Taiwan Society for Biochemistry and Molecular Biology: Beigang Autumn Camp, Nantou, Taiwan, November 11-13, 2010.

25. Hu, C.-W., Chang, Y.-L., Huang, H.-C., Chen, H.-C., K.-Huang, L-L, J. C. Liao, Juan, H.-F.*, "A proteomic study of growth enhancement by Calvin-Benson-Bassham cycle proteins and chaperonin GroEL gene over-expression in Rhodopseudomonas palustris", (Abstract#P7) The Taiwan Society for Biochemistry and Molecular Biology: Beigang Autumn Camp, Nantou, Taiwan, November 11-13, 2010. (Poster

presentation)

26. Tseng, C.-W., Lin, C.-C. , Huang, H.-C., Chen, C.-N. , Juan, H.-F *, "Integrative Network Analysis Reveals Key MicroRNAs and Their Functions in Gastric Cancer", (Abstract#P02.114) The 11th International Conference on Systems Biology, Edinburgh, Scotland, UK, October 10-15, 2010.
27. Hsu, W.-M., Shih, Y.-Y., Lee, H.-Y., Juan, H.-F., Tsay, Y.-G., Liao, Y.-F., "The interaction between GRP75 and retenoic acid receptor-α/retenoid X receptor-α is essential for retenoic acid-induced neuronal differentiation of neuroblastoma cells", (Poster Competition Award). Advances in Neuroblastoma Research, Stockholm, Sweden, June 21-24, 2010.
28. Chang, H.-H., Hsu, W.-M., Juan, H.-F., Liao, Y.-F., Huang, M.-C., Lee, H.-Y., Hsieh, F.-J. Lin, K.-H., "Microarray-based pathway analysis leads to the identification of potential molecularmechanisms underlying gamma-secretase inhibitor-induced differentiation", Advances in Neuroblastoma Research, Stockholm, Sweden, June 21-24, 2010.
29. Wen-Ming Hsu, Pei-Yi Wu, Juan, H.-F., Lee, H.Y., "Aromatic hydrocarbon receptor down-regulates MYCN expression and promotes neuronal differentiation of neuroblastoma", Advances in Neuroblastoma Research, Stockholm, Sweden, June 21-24, 2010.
30. Chou, Y.-T., Lin, L.-L., Lin C.-C., Huang, H.-C., Juan, H.-F.*, "The role of annexin A4 in gastric cancer cell proliferation", (Abstract#P6-005) The 15th Joint Biophysics Conference, Taipei, Taiwan, May 19-21, 2010.
31. Liang, S.-P., Lin, C.-C., Wang, H.-W, Juan, H.-F.*, Huang, H.-C., "Dynamic features of functional network modules during tumor progression", (Abstract#P6-012) The 15th Joint Biophysics Conference, Taipei, Taiwan, May 19-21, 2010.
32. Chen, C.-Y, Hsu, W.-M., Huang, H.-C., Juan, H.-F.*, "The impact of miR-124 on neuroblastoma cell differentiation", (Abstract#P6-020, Poster Competition Award) The 15th Joint Biophysics Conference, Taipei, Taiwan, May 19-21, 2010.
33. Hsu, C.-C., Chou, Y.-T., Huang, H.-C., Shih, A. C.-C., Li, W.-H. *, Juan, H.-F.*, "Gene expression networks of microrna p-27-5p-treated human breast cancer cells", (Abstract#P691, Poster Award) 25th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 27-28, 2010.
34. Yi, T.-H., Lin, M.-H., Wu, S.-H., Huang, H.-C., Juan, H.-F.*, "Phosphoproteome of Rhodopseudomonas palustris", (Abstract#P690) 25th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 27-28, 2010.
35. Pai, C.-C., Chen, C.-Y., Chen, S.-T., Juan, H.-F.*, Huang, H.-C.*, "Co-regulation of microRNA and transcription factor in Drosophila melanogaster transcriptional and protein-protein interaction networks", (Abstract#P698) 25th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 27-28, 2010.
36. Wu, H.-C., Juan, H.-F., Hsiang, J.-T., Wu, K.-P.*, Huang, H.-C.*, "Effects of microRNA regulation on noise in gene expression", (Abstract#P699) 25th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 27-28, 2010.
37. Wu, Y.-S., Lin, C.-C., Oyang, Y.-J., Juan, H.-F.*, Huang, H.-C.*, "Integrative Network Analysis Reveals Dynamic Functional Modules in Drosophila melanogaster Embryonic Development", (Abstract#P891) 25th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 27-28, 2010.

※專書 Books

1. Juan, H.-F. and Huang, H.-C., "Applications in cancer-related research (World Scientific Publishing, Singapore)", Systems Biology, 2012.
2. Juan, H.-F.,"Transcriptomics and proteomics study in regulation of brassinosteroids", in Brassinosteroids: A Class of Plant Hormone, ed. Shamsul Hayat and Aqil Ahmad (Springer, Netherlands), pp. 393-402, 2011.

高成炎教授 Cheng-Yan Kao,Professor

※學術期刊論文 Journal articles & book chapters

1. Lee SA†, Tsao TTH†, Yang KC, Lin H, Kuo YL, Hsu CH, Lee WK, Huang KC, Kao CY*, "Construction and analysis of the protein-protein interactio networks for schizophrenia, bipolar disorder, and major depression", BMC Bioinformatics, 2011.

2. Chen MH, Yang WL, Lin KT, Liu CH, Liu YW, Huang KW, Chang PM, Lai JM, Hsu CN, Chao KM, Kao CY, Huang CY, "Gene expression-based chemical genomics identifies potential therapeutic drugs in hepatocellular carcinoma", PLOS One, 2011.
3. Hsu CH†, Wang TY†, Chu HT, Kao CY *, Chen KC*, "A quantitative analysis of monochromaticity in genetic interaction networks", BMC Bioinformatics, 12(Suppl13), S16, 2011.

管傑雄教授 Chieh-Hsiung Kuan, Professor

※學術期刊論文 Journal articles & book chapters

1. S. H. Lin, David J. Y. Feng, M. L. Lee, J. H. Lu, T. P. Sun, T. S. Lay, C. H. Kuan, "The Mechanism of Carrier Transportation in a Superlattice Infrared Photodetector Sandwiched by Front and Rear Barriers", Int. J. Electrochem. Sci., 1937-1945, 7, 2012.
2. H. M. Chen, C. H. Kuan, Y. W. Suen, G. L. Luo, Y. P. Lai, F. M. Wang, and S. T. Chen, "Thermally induced morphology evolution of pit-patterned Si substrate and its effect on nucleation properties of Gedots", Nanotechnology, 015303, 23, 2012.
3. C. W. Chiu, T. W. Liao, K. Y. Tsai, F. M. Wang, Y. W. Suen, and C. H. Kuan, "Fabrication method of high-quality Genanocrystals on patterned Si substrates by local melting point control", Nanotechnology, 275604, 22, 2011.
4. S. H. Lin, David J. Y. Feng, J. H. Lu, K. J. Wu, T. S. Lay, and C. H. Kuan, "Device Performance and Photoelectron Resonance in Double-Barrier Superlattice Infrared Photodetectors", Journal of The Electrochemical Society, H370-H373, 158, 2011.
5. S. Y. Chen, K. Y. Tsai, Philip C. W. Ng, H. T. Ng, C. H. Liu, Y. T. Shen, C. H. Kuan, Y. Y. Chen, Y. H. Kuo, C. J. Wu, and J. Y. Yen, "In situ beam drift detection using a two-dimensional electron-beam position monitoring system for multiple-electron-beam-direct-write lithography", Journal of Vacuum Science and Technology B, 041607, 29, 2011.
6. W. T. Chen, P. C. Wu, C. J. Chen, C. J. Weng, H. C. Lee, T. J. Yen, C. H. Kuan, M. Mansuripur, and D. P. Tsai, "Manipulation of multidimensional plasmonic spectra for information storage", Applied Physics Letters, 171106, 98, 2011.
7. Y. W. Lan, L. N. Nguyen, S. J. Lai, M. C. Lin, C. H. Kuan, and C. D. Chen, "Identification of embedded charge defects in suspended silicon nanowires using a carbon-nanotube cantilever gate", Applied Physics Letters, 053104, 99, 2011.
8. W. T. Chen, P. C. Wu, C. J. Chen, H. Y. Chung, Y. F. Chau, C. H. Kuan, and D. P. Tsai, "Electromagnetic energy vortex associated with sub-wavelength plasmonicTaiji marks", OPTICS EXPRESS, Vol. 18, 19665, 2010.

※研討會論文 Conference & proceeding papers

1. C.W.Chiu, T.W.Liao, C. H. Kuan, "Growing evaporated Ge dots with high crystallinity on patterned Si substrate by post thermal annealing", 2010 SSDM, Tokyo, Japan, Sept. 2010.
2. C.W.Lee and C. H. Kuan, "The Fabrication of Silver Striped Gratings and Optimal Solutions for the TE-Mode Infrared Transmission through the Gratings", 2010 MNC, Kokura, Japan, Nov. 2010.
3. C.W.Lee, C. H. Kuan, "Optimal Solutions for the TE-Mode Infrared Transmission through the Silver Gratings", 2010 TechConnect World Conference and Expo, Anaheim, California, USA, Jun. 2010.
4. S.H.Lin, M.L.Lee, C. H. Kuan, "Multi-color Double-barrier Superlattice infrared photodetector combined with quantum well infrared photodetector for operation at high temperature and low bias", 2010 OECC, Sapporo, Japan, Jul. 2010.

※專書 Books

1. Shih-Hung Lin, C. H. Kuan, "Development of Superlattice Infrared Photodetectors (Cutting Edge Nanotechnology)", IN-TECH, 2010, ISBN: 978-953-7619-93-0, 2010.

郭柏齡助理教授 Po-Ling Kuo, Assistant Professor

※學術期刊論文 Journal articles & book chapters

1. Hsu T-H, Kao Y-L, Lin W-L, Xiao J-L, Kuo P-L*, Wu C-W, Liao W-Y, Lee C-H, "The migration speed of cancer cells influenced by macrophages and myofibroblasts co-cultured in a microfluidic chip", Integr. Biol., 4, 177–182, 2012.

2. Grosberg A*, Kuo P-L*, Guo CL, Geisse NA, Bray MA, Adams WJ, Sheehy SP, Parker KK, "Self-organization of muscle cell structure and function", PLoS Comput Biol, 7(2), e1001088, Feb. 2011 (*contributed equally).
3. Xiao J-L, Hsu T-H, Hsu P-Y, Yang W-J, Kuo P-L*, Lee C-H, "Motion of cancer-cell lamellipodia perturbed by laser light of two wavelengths", Appl. Phys. Lett., 97, 203702, 2010
4. O'Grady ML, Kuo P-L*, Parker, KK., "Optimization of electroactive hydrogel actuators", ACS Appl Mater Interfaces, 2(2), 343-6, 2010.

※研討會論文 Conference & proceeding papers

1. Yeh C-L, Kuo P-L*, Li P-C, "Investigation of anisotropic properties of tendon by supersonic shear elasticity imaging", International Ultrasonic Symposium, Dresden, Germany, 2012.
2. Tsai C-H, Lin C-T, Kuo P-L*, "Regulation of C2C12 cells migration with dual mechanical cues", International Symposium on Microchemistry and Microsystems, Hsinchu, Taiwan, R.O.C., 2012 (Best poster award).
3. Liu Y-R. and Kuo P-L*, "Culturing Cells on Flexible Substrates of High Refractive Indexes", Material Research Society, Boston, MA, USA, 2011.
4. Yeh C-L, Kuo P-L*, Li P-C, "Evaluation the loosening effect of therapeutic ultrasound with different exposure time on joint capsule", Annual Symposium on Biomedical Engineering and Technology, Tainan, Taiwan, R.O.C., 2011.
5. Kuo P-L*, Yeh C-L, Li P-C, "Joint Capsule Loosening by High-Intensity Pulsed Ultrasound", International Ultrasonic Symposium, San Diego, CA, USA, 2010.

李枝宏教授 Ju-Hong Lee,Professor

※學術期刊論文 Journal articles & book chapters

1. Ju-Hong Lee and Yuan-Hau Yang, "Design of 2-D interpolation/decimation filters using a general 2-D digital allpass filter", Digital Signal Processing, 22(5), 847-858, September 2012.
2. Ju-Hong Lee and C.-C. Huang, "Robust Cyclic Adaptive Beamforming Using a Compensation Method", Signal Processing, 92(4), 954-962, Apr. 2012.
3. C.-C. Huang and Ju-Hong Lee, "Robust Adaptive Array Beamforming Using a Fully Data-Dependent Loading Technique", Progress In Electromagnetics Research B, 37, 307-325, Feb. 2012.
4. Ju-Hong Lee and Y.-H. Yang, "Two-Dimensional Recursive Digital Filters with Nearly Circular-Symmetric Magnitude Response and Approximately Linear Phase", International Journal of Circuit Theory and Applications, 39(12), 1215-1229, Dec. 2011.
5. Ju-Hong Lee, "Robust Antenna Array Beamforming Under Cycle Frequency Mismatch", Progress In Electromagnetics Research B, 35, 307-328, Nov. 2011.
6. Ju-Hong Lee and Y.-L. Chen, "Performance Analysis of Antenna Array Beamformers with Mutual Coupling Effects", Progress In Electromagnetics Research B, 33, 291-315, Aug. 2011.
7. Ju-Hong Lee, G.-W. Jung and W.-C. Tsai, "Antenna Array Beamforming in the Presence of Spatial Information Uncertainties", Progress In Electromagnetics Research B, 31, 139-156, Jun. 2011.
8. C.-C Huang and Ju-Hong Lee, "Adaptive Array Beamforming Using Signal Cyclostationarity and Finite Data", Progress In Electromagnetics Research C, 21, 217-228, May 2011.
9. Ju-Hong Lee and Y.-H. Yang, "Two-Channel Parallelogram QMF Banks Using 2-D NSHP Digital Allpass Filters", IEEE Transactions on Circuits and Systems I, 57(9), 2498-2508, Sept. 2010.
10. Ju-Hong Lee and C.-C. Huang, "Robust Adaptive Beamforming for Multiple Signals of Interest With Cycle Frequency Error", EURASIP Journal on Advances in Signal Processing, 2010.

※研討會論文 Conference & proceeding papers

1. Ju-Hong Lee and C.-H. Shan, "Antenna Array Beamforming Under Coherent Signal Sources", To be presented in IEEE Vehicular Technology Society Asia Pacific Wireless Communications Symposium, Kyoto University, Kyoto, Japan, August 23-24, 2012. (NSC97-2221-E002-174-MY3 and NSC100-2221-E002-200-MY3)
2. C.-C. Huang and Ju-Hong Lee, "Novel robust adaptive beamforming", Proceedings of IEEE 75th Vehicular Technology Conference: VTC2012-Spring, Yokohama, Japan, May 6-9, 2012. (NSC97-2221-E002-174-MY3)
3. Ju-Hong Lee and C.-C. Cheng, "The spatial correlation characteristics of 3-D antenna array systems", To appear in Proceedings of the 54th IEEE International Midwest Symposium on Circuits and Systems, Seoul, Korea, August 2011. (NSC97-2221-E002-174-MY3)
4. Ju-Hong Lee and S.-I. Li, "Three-dimensional spatial correlation characteristics of concentric ring antenna array systems, " To appear in Proceedings of the 17th International Conference on Digital Signal Processing, Corfu, Greece, July 2011. (NSC97-2221-E002-174-MY3)
5. Ju-Hong Lee and Y.-H. Yang, "General lattice structures of 2-D recursive digital filters", To appear in Proceedings of the 54th IEEE International Midwest Symposium on Circuits and Systems, Seoul, Korea, August 2011. (NSC97-2221-E002-116-MY3)
6. Ju-Hong Lee and K.-W. Jung, "Antenna array beamforming under random sensor position perturbation and mutual coupling", Proceedings of the 16th Asia-Pacific Conference on Communications, Auckland, New Zealand, pp.63-68, October 2010. (NSC97-2221-E002-174-MY3)

李嗣涔教授 Si-Chen Lee, Professor

※學術期刊論文 Journal articles & book chapters

1. C. J. Huang, C. H. Yang, C. Y. Hsueh, J. H. Lee; Y. T. Chang, S. C. Lee, "Performance Enhancement of Silicon Nanowire Memory by Tunnel Oxynitride", IEEE Electron Device Lett., 33(1), 20-22, 2012.
2. C. T. Huang, Y. C. Chen, S. C. Lee, "Improved photoresponse of InAs/GaAs quantum dot infrared photodetectors by using GaAs1-xSbx strain reducing layer", Appl. Phys. Lett., accepted, 2012.
3. W. C. Tu, Y. T. Chang, H. P. Wang, C. H. Yang, C. T. Huang, J. H. He, and S. C. Lee,, "Improved Light Scattering and Surface Plasmon Tuning in Amorphous Silicon Solar Cells by Double-Walled Carbon Nanotubes", Solar Energy Materials and Solar Cells, accpeted, 2012.
4. H. K. Chang and S. C. Lee, "Morphology Control and Optical Properties of SiGe Nanostructures Grown on Glass Substrate", Nanoscale Research Lett., accepted, 2012.
5. S. Y. Huang, H. H. Chen, H. H. Hsiao, P. E. Chang, Y. T. Chang, C. H. Chen, Y. W. Jiang, H. C. Chang and S. C. Lee, "Triple Peaks Plasmonic Thermal Emitter with Selectable Wavelength Using Periodic Block Pattern as Top Layer", IEEE Photonics Technology Letters, accepted, 2012.
6. J. H. Lee, C. Y. Chang, C. H. Li, S. Y. Lin, and S. C. Lee, "Performance Improvement of AlGaAs/GaAs QWIP with NH3 Plasma Treatment", IEEE Journal of Quantum Electronics, accepted, 2012.
7. F. T. Chuang, P. Y. Chen, Y. W. Jiang, M. Farhat, H. H. Chen, Y. C. Chen, S. C. Lee, "Nanoprojection lithography using self-assembled interference modules for manufacturing plasmonic gratings", IEEE. Photon Technol. Lett., accepted, 2012.
8. P. E. Chang, Y. W. Jiang, H. H. Chen, Y. T. Chang, Y. T. Wu, Lawrence D. C. Tzuang, Y. H. Ye, and S. C. Lee, "Wavelength Selective Plasmonic Thermal Emitter by Polarization Utilizing Fabry-Perot Type Resonances", Appl. Phys. Lett., 98, 073111., 2011
9. H. F. Huang, Y. W. Jiang, H. H. Chen, Y. T. Wu, Y. T. Chang, F. T. Chuang, and S. C. Lee, "Localized shape resonance on silver film perforated by H-shaped and more complex shaped hole arrays", Optics express, 19 (6), 5225–5231, 2011
10. Y. W. Jiang, F. T. Chuang, H. H. Chen, and S. C. Lee, "Self-Assembled Rippling Structure Based on Metal- Elastomer Composite for Tunable Plasmonics", IEEE Photonics Technology Letters, 23(670)., 2011
11. M. N. Abbas, C. W. Cheng, Y. C. Chang, M. H. Shih, H. H. Chen, and S. C. Lee, "Angle and polarization independent narrow-band thermal emitter made of metallic disk on SiO2", Appl. Phys. Lett,, 98, 121116, 2011
12. S. Y. Huang, H. H. Hsiao, Y. T. Chang, H. H. Chen, Y. W. Jiang, H. F. Huang, P. E. Chang, H. C. Chang and S. C. Lee, "Extraordinary Transmission through a Silver Film Perforated with Bowtie-Shaped Aperture Array in Mid-Infrared Region", Appl. Phys. Lett., 98,253107, 2011
13. C. J. Huang, C. H. Yang, C. Y. Hsueh, J. H. Lee, Y. T. Chang, and S. C. Lee, "Stress Effects on Self-Aligned Silicon Nanowires Junctionless Field

Effect Transistors", IEEE Electron Device Lett.,32(9),1194-1196, 2011

14. C. H. Yang, C. Y. Hsueh, D. J. Yeh, C. I Ho, C. M. Leu, Y. H. Yeh, and S. C. Lee, "Hydrogenated Amorphous Silicon Solar Cells on Textured Flexible Substrate Copied from a Textured Glass Substrate Template", IEEE Electron Device Lett., 32(9) , 1254-1256, 2011
15. S. R. Tsai, T. C. Huang, C. M. Liang, H. Y. Chang, Y. T. Chang, H. C. Huang, H. F. Juan, S. C. Lee, "The effect of narrow bandwidth infrared radiation on the growth of Escherichia coli", Appl. Phys. Lett., 99, 163704, 2011
16. J. H. Lee, Y. T. Chang, C. J. Huang, S. Y. Lin, and S. C. Lee, "Two-color Quantum Dot Infrared Photodetectors With Periodic Cross Metal Hole Array Contact", IEEE Photon. Technol. Lett., 20(8),577-579, 2010
17. Y. T. Wu, Y. T. Chang, H. H. Chen, H. F. Huang, D. C. Tzuang, Y. W. Jiang, P. E. Chang, and S. C. Lee, "Narrow Bandwidth Mid-Infrared Waveguide Thermal Emitters", IEEE Photon. Tech. Lett., 22, 1159-1161, 2010
18. Y. T. Wu, Y. T. Chang, Y. W. Jiang, P. E. Chang, Y. H. Ye, D. C. Tzuang, H. H. Chen, H. F. Huang, and S. C. Lee, "Extraordinary Transmission through Ag/Si Structure Perforated with Rhombus Lattice Hole Arrays", IEEE Photon. Technol. Lett., 22(20), 1482-1484, 2010
19. H. H. Chen, Y. W. Jiang, Y.T. Wu, P. E. Chang , Y. T. Chang, H. F. Huang, S. C. Lee, "Narrow Bandwidth and Highly Polarized Ratio Infrared Thermal Emitter", Appl. Phys. Lett., 97, 163112, 2010
20. W. C. Tu, Y. T. Chang, C. H. Yang, D. J. Yeh , C. I. Ho, C. Y. Hsueh, and S. C. Lee, "Hydrogenated Amorphous Silicon Solar Cell on Glass Substrate Patterned by Hexagonal Nano-Cylinder Array", Appl. Phys. Lett., 97, 193109, 2010
21. H. K. Chang and S. C. Lee, "The growth and radial analysis of Si/Ge core-shell nanowires", Appl. Phys. Lett., 97, 251912, 2010
22. C. H. Liou, C. W. Hsieh, C. H. Hsieh, D. Y. Chen, C. H. Wang, J. H. Chen, S. C. Lee, "Detection of nighttime melatonin level in Chinese Original Quiet Sitting", Journal of the Formosan Medical Association, 109(10), 694-701, 2010

※研討會論文 Conference & proceeding papers

1. C. H. Yang, D. J. Yeh, C. I Ho, C. Y. Hsueh, and S. C. Lee, "A Comparison for the stability of p-i-n and n-i-p amorphous solar cell fabricated by HWCVD",2012 MRS Spring Meeting, San Francisco, U.S.A., April 9-14, 2012.
2. Y. C. Chen, H. H. Chen, S. Y Huang, C. W. Yu and S. C. Lee, "Enhancing the transmission of high order plasmon modes through double-paired apertures with Au/Si structure",META 2012, Paris, France, April 19-22, 2012.
3. C. T. Huang, Y. C. Chen and S. C. Lee, "Photoresponse improvement of InAs/GaAs quantum dot infrared photodetectors using GaAs1-xSbx overgrown layer", 2011 SSDM, Nagoya, Japan, Sept. 2011
4. H. H. Chen, Y. T. Chang, C. W. Yu, S. Y. Huang, F. T. Chuang and S. C. Lee, "Enhanced localized surface plasmon resonance in a stacked structure", 2011 SSDM, Nagoya, Japan, Sept. 2011
5. C. W. Ronald Yu, Y. T. Chang, H. H. Chen, and S. C. Lee, "Enhancement of Localized Resonance through Non-Centrosymmetric Trumpet Hole Arrays in Ag/Si and Ag/SiO2/Ag Structure", 2011 11th IEEE Nano Conference, Portland, U.S.A, Aug. 2011
6. H. H. Chen, Y. T. Chang, S. Y. Huang, F. T. Chuang, C. W Yu and S. C. Lee,, "Two-color polarized infrared emission in a waveguide thermal emitter", 2011 11th IEEE Nano Conference, Portland, U.S.A., Aug. 2011
7. S. Y. Huang, P. E. Chang, H. H. Chen, C. H. Chen, C. W. R. Yu, S. C. Lee, "Triple Peaks Plasmonic Thermal Emitter with Selectable Wavelength Using Periodic block Pattern as Top Layer", 2011 11th IEEE Nano Conference, Portland, U.S.A., Aug. 2011
8. W. C. Tu, Y. T. Chang, C. H. Yang, D. J. Yeh , C. I. Ho, C. Y. Hsueh, and S. C. Lee, "Improved light scattering in amorphous silicon solar cell by double-walled carbon nanotubes", 2011 11th IEEE Nano Conference, Portland, U.S.A., Aug. 2011
9. D. J. Yeh, C. I. Ho, P. C. Yang, C. H. Yang, S. C. Lee, "Enhancement of heterojunction silicon solar cell efficiency by Aunanoparticles", 2011 11th IEEE Nanotechnology Conference, Portland, U.S.A., Aug. 2011
10. C. J. Huang and S. C. Lee, "Stress Effect on Self-Aligned Silicon Nanowires Junctionless Field Effect Transistors", 2011 11th IEEE Nanotechnology Conference, Portland, U.S.A., Aug. 2011

11. W. C. Tu, Y. T. Chang, C. H. Yang, D. J. Yeh, C. I. Ho and S. C. Lee, "a-Si:H Solar Cell with Hexagonal Nano-Cylinder Array on Glass Substrate", 2010 International Conference on Solid State Devices and Materials (SSDM 2010), Tokyo, Japan, Sept. 2010

12. H. K. Chang and S. C. Lee, "Low temperature synthesis of one-dimensional tube-like Ge nanostructures", Nanofair 2010 - 8th International Nanotechnology Symposium, International Congress Center Dresden, Germany, Jul. 2010

13. C. I. Ho, C. H. Yang, C. J. Huang, D. J. Yeh, Y. S. Chu, C. Y. Hsueh, W. C. Tu, T. Y. Ma, and S. C. Lee, " Photocurrent enhancements in amorphous silicon solar cells by embedded metallic nanoparticles", 2010 35th IEEE Photovoltaic Specialist Conference (PVSC), Hawaii, U.S.A, Jun. 2010

14. C. Y. Hsueh, C. H. Yang, and S. C. Lee, "High mobility a-Si:H TFT fabricated by Hot Wire Chemical Vapor Deposition", 2010 MRS Spring Meeting, Moscone West and San Francisco Marriott, Apr. 2010

15. Y. T. Chang, S. R. Tsai, Y. T. Wu, H. H. Chen, H. F. Huang, P. E. Chang, C. W. Yu and S. C. Lee, "Emission Enhancement in Tri-Layer Ag/SiO2/Ag Plasmonic Thermal Emitter with Hexagonal Dimple Array", 7th International Conference on Optics-photonics Design and Fabrication, Pacifico Yokohama Conference Center, Yokohama, Japan, Apr. 2010

16. P. E. Chang, Y. W. Jiang, Y. H. Ye, Y. T. Wu, Y. T. Chang, H. H. Chen, H. F. Huang and S. C. Lee, "Polarization Engineering of Thermal Radiation by Utilizing Fabry-Perot Type Surface Plasmon Polariton", 7th International Conference on Optics-photonics Design and Fabrication, acifico Yokohama Conference Center, Yokohama, Japan, Apr. 2010

17. Y. T. Chang, H. H Chen, I. C. Tung, H.F. Huang, P.E. Chang and S. C. Lee, "Optical Characteristics of Al/Si structure and Ag/Al2O3/Ag Plasmonic Thermal Emitter with Square and Hexagonal Lattice", IEEE International NanoElectronics Conference (INEC), Hong Kong, Jan. 2010

林致廷副教授 Chih-Ting Lin, Associate Professor

※學術期刊論文 Journal articles & book chapters

1. Chung, S.-L., Wang, Y.-L., Tsai, C.-H., Lin, C.-T., "On-chip biological patterning controlled by electrical potential", Microelectronic Engineering 2012 (accepted).
2. Huang, J.-D., Wu, W.-J., Lin, C.-T., "High efficient synchronization-on-demand protocol of IEEE 802.15.4 wireless sensor network for construction monitoring", International Journal of Automation and Smart Technology 2012 (accepted)
3. Lin, C. W., Tai, Y., Liaw, D. J., Chen, M. C., Huang, Y. C., Lin, C.-T., Huang, C. W., Yang, Y. J., and Chen, Y. F., "Towards transparent electronics: fabrication of an organic transistor with a wide bandgap polymer", Journal of Materials Chemistry, 2012, 22, 57-59.
4. Lin, C.-T.*, Hsu, C.-H., Lee C.-H., and Wu, W.-J., "Inkjet-Printed Organic Field-Effect Transistor by Using Composite Semiconductor Material of Carbon Nanoparticles and Poly(3-hexylthiophene)", Journal of Nanotechnology, vol. 2011, Article ID 142890, 2011. (doi:10.1155/2011/142890.)
5. Lin, C.-T.*, Hsu, C.-H., Chen, I.-R., Lee C.-H., and Wu, W.-J., "Enhancement of Carrier Mobility in All-Inkjet-Printed Organic Thin-film Transistors Using a Blend of Poly(3-hexylthiophene) and Carbon Nanoparticles", Thin Solid Films, 519 (2011), pp. 8008-8012 DOI: 10.1016/j.tsf.2011.05.071
6. Huang, J.-D., Lee, C.-K., Yeh, C.-S., Wu, W.-J., and Lin, C.-T.*, "High Precision Ultrasonic Ranging System Platform Based on Peak-Detected Self-Interference Technique", IEEE Transaction on Instrumentation and Measurement, 60 (2011), 3 775-3780, DOI: 10.1109/TIM.2011.2149391
7. Lin, C.-T.* and Lin, C.-H., "A Statistical Nanomechanism of Biomolecular Patterning Actuated by Surface Potential", Journal of Applied Physics, 109, 034702, 2011.
8. Lin, C.-T.*, Chung, S.-L., Lin, C.-H., Kuo, P.-L., and Li, C.-H., "The Configurable-Biomolecular Nano Pattern Controlled by Surface Potential", Microelectronic Engineering, 88, 1785-1788, doi:10.1016/j.mee.2010.12.041 2011.
9. H. R. Lin, C. S. Chen, P. Y. Chen, F. J. Tsai, J. D. Huang, J. F. Li , Lin, C.-T.*, and W.J. Wu, "Design of Wireless Sensor Network and Its Application for Structure Health Monitoring of Cable-stayed Bridge", Smart Structures and Systems, 6,939-951, 2010. (1.316)
10. Lin, C.-T.* and Huang, C.-W., "Low-Power and High-Sensitivity Humidity Sensor Using Fe-Al-Polyaniline Blends", IEEE Sensors Journal, 10, 6, 1142-1146, 2010. (1.473)

11. Lin, C.-T.*, Meyhofer, E., and Kurabayashi, K, "Predicting the stochastic guiding of kinesin-driven microtubules in microfabricated tracks: A statistical-mechanics-based modeling approach", Physical Review E, 81, 011919, 2010. (2.352)

12. Tseng J.-J., Lin, C.-H., Lin, C.-T.*., Wang S.-C., Li, S.-P., "Statistical properties of agent-based models in markets with continuous double auction mechanism", Physica A-Statistical Mechanics and Its Applications, 389, 8, 1699-1707, 2010. (1.522)

※研討會論文 Conference & proceeding papers

1. C.-W. Huang, Y.-J. Huang, P.-W. Yen, H.-T. Hsueh., C.-Y. Lin, M.-C. Chen, C.-H. Ho, F.-L. Yang, H.-H. Tsai, H.-H. Liao, Y.-Z. Juang, C.-K. Wang, Lin, C.-T., and S.-S. Lu, "A Fully Integrated Hepatitis B Virus DNA Detection SoC based on Monolithic Polysilicon Nanowire CMOS Process.", 2012 Symposia on VLSI Technology and Cricuits, Hawaii, USA, June 2012.

2. M.-C. Chen, C.-H. Lin, C.-Y. Lin, F.-K. Hsueh, W.-H. Huang, Y.-C. Lien, H.-C. Chen, H.-T. Hsueh, C.-W. Huang, Lin, C.-T., Y.-C. Liu, T.-H. Lee, M.-Y. Hua, J.-T. Qui, M.-C. Liu, Y.-J. Lee, J.-M. Shieh, c.-H. Ho, C.-M. Hu, and F.-L. Yang, "Sub fM DNA sensitivity by self-aligned maskless thin-film transistor-based SoC bioelectronics", 2012 Symposia on VLSI Technology and Cricuits, Hawaii, USA, June 2012.

3. C.-H. Tsai, Lin, C.-T., P.-L. Kuo, "Regulation of C2C12 cells migration with dual mechanical cues", 2012 International Symposium on Microchemistry and Microsystems, Hsinchu, Taiwan, June 2012.

4. C.-W. Huang, H.-T. Hsueh,Y.-J. Huang, J.-K. Lee, M.-C. Chen, S.-S. Lu, and Lin, C.-T., "Low-cost and Ultra-sensitive Poly-Si Nanowire Bio-sensor for Hepatitis B Virus (HBV) DNA Detection", 2012 IEEE International Symposium on Circuits and Systems, Seoul, Korea, May 2012.

5. C.-W. Huang, H.-T. Hsueh, J.-K. Lee, and Lin, C.-T., "CMOS based biosensor", Analytix 2012, Beijing, China, March, 2012. (invited)

6. C.-W. Huang, H.-T. Hsueh, Y.-R. Chang, and Lin, C.-T., "The development of poly-silicon nanowire biosensor devices", The 9th Asian Conference on Chemical Sensors, Taipei, Taiwan, Nov. 2011. (invited)

7. C.-W. Huang, H.-T. Hsueh, Y.-J. Huang, J.-K. Lee, T.-H. Lin, S.-S. Lu,Y.-Z. Juang, and Lin, C.-T., "Fully Integrated Micro-Cantilever chip for Biomolecular detection", The 22nd International Conference on Adaptive Structures and Technologies, Corfu, Greece, Oct. 2011

8. C.-W. Huang, Y.-J. Huang, T.-H. Lin, Lin, C.-T., J.-K. Lee, L.-G. Chen, P.-Y. Hsiao, B.-R. Wu, H.-T. Hsueh, B.-J. Kuo, H.-H. Tsai, H.-H. Liao, Y.-Z. Juang, and S.-S. Lu. ",An Integrated Microcantilever-based Wireless DNA Chip for Hepatitis B Virus (HBV) DNA Detection", the 15th International Conference on Miniaturized Systems for Chemistry and Life Science, Seattle, WA, USA, Oct. 2011.

9. Lin, C.-T..*, "The implementation of fully integrated CMOS based biomolecular sensor", Chinese-German Young Scientist Forum on Microeletronics and Microwave Systems, Beijing, China, Sep. 2011.

10. Lin, C.-T..*, "The implementation of fully integrated CMOS based biomolecular sensor", Chinese-German Young Scientist Forum on Microeletronics and Microwave Systems, Beijing, China, Sep. 2011.

11. J.-Y. Han, H.-P. Tserng, Lin, C.-T.*, "Quality Assessment for Lidar Point Cloud Registration Using In-Situ Conjugate Features", IEEE International Geoscience and Remote Sensing Symposium, Vancouver, Canada, July, 2011.

12. Y.-C. Shih, J.-H. Lee, Lin, C.-T.*, C.-S. Chen, K.-C. Wu, "Charge Confinement in Silicon Nanowires by Surface Functionalization", Nanotech Conference, Boston, MA, USA, June 2011.

13. C.-W. Huang, H.-T. Hsueh, Y.-J. Chang, and Lin, C.-T.*, "The design and implementation of sensor-on-chip CMOS based biomolecular/chemical sensor", 2011 CMOS Emerging Technologies Meeting, Whistler, BC, Canada, June 2011. (invited)

14. J.-D. Huang, W.-J. Wu, J.-Y. Han, H.-P. Tserng, and Lin, C.-T.*, "High efficient synchronization on demand protocol of IEEE 802.15.4 wireless sensor network for construction monitoring", The 28th International Symposium on Automation and Robotics in Construction, Seoul Korea, June 2011.

15. Y.-J. Huang, C.-W. Huang, T.-H. Lin, Lin, C.-T.*, L.-G. Chen, P.-Y. Hsiao, B.-R. Wu, H.-T. Hsueh, B.-Y. Kuo, H.-H. Tsai, H.-H. Liao, Y.-Z. Juang, C.-K. Wang, and S.-S. Lu, "A fully-integrated cantilever based DNA detection SoC in a CMOS Bio-MEMS Process", 2011 Symposia on VLSI Technology and Cricuits, Kyoto, Japan, June 2011.

16. Lin, C.-T.*, J.-C. Wang, C.-W. Huang, H.-T. Hsueh, and Y.-J Chang, "CMOS compatible polysilicon nanowire FET for biomolecular sensing", Japan-Taiwan Joint Workshop on Bioelectronics, Tainan, Taiwan Jan. 2011.

17. C.-H. Hsu, C.-H. Li, S.-B.i Liu, C.- H. Chen, S.-H. Lin, Lin, C.-T.*, and W.-J. Wu, "All-inkjet-printed organic thin film transistors", International Conference on Flexible and Printed Electronics (ICFPE 2010), Hsinchu, Taiwan, Oct. 2010.

18. C.-H. Lin, S.-L. Chung, C.-H. Li, and Lin, C.-T.*, "The Configurable-Biomolecular Nano Pattern Controlled by Surface Potential", 36th International Conference on Micro & Nano Engineering, Genoa, Italy, Sept. 2010.

19. Lin, C.-T.*, C.-W. Huang, J.-C. Wang, "Poly-Silicon Nanowire FET Chemical Sensor", Proceedings of ASME 2010 First Global Congress on NanoEngineering for Medicine and Biology, Houston, Texas, Feb. 2010.

20. J.-C. Wang, C.-W., Huang, H.-T. Hsueh, Y.-J. Chang, J.-K. Lee, Lin, C.-T.*, "Enhancement of Polysilicon Nanowire FET Bio-molecule Sensor", ASME 5th Frontiers in Biomedical Devices Conference, California, U.S.A., Sept. 2010.

21. S.-K. Hsu, H.-P. Yueh, Lin, C.-T.*, and Y.-J. Liu, "Exploring concept learning in a wireless sensor networking environment: A Chinese language example", International Conference on Cognition and Exploratory Learning in Digital Age (CELDA 2010), Timisoara, Romania, Oct. 2010

22. Y.-C. Shih, C.-S. Chen, Lin, C.-T.*, and K.-C. Wu, "Electron Transportation Behavior in Single Crystal Silicon Nanowires", Proceedings of ASME 2010 First Global Congress on NanoEngineering for Medicine and Biology, Houston, Texas, Feb. 2010.

林啓萬教授 Chii-Wann Lin, Professor

※學術期刊論文 Journal articles & book chapters

1. C.-C. Chang, S. Lin, S.-C. Wei, Y. C.-Su, C.-W. Lin*, "Surface Plasmon Resonance Detection of Silver Ions and Cysteine Using DNA Intercalator-Based Amplification", Analytical and Bioanalytical Chemistry, 402 (2012), 2827-2835 (SCI IF = 3.841 , 5-year IF=3.668)
2. T.-L. Chuang, S.-C. Wei, S.-Y. Lee, C.-W. Lin, "A Polycarbonate Based Surface Plasmon Resonance Sensing Cartridge For High Sensitivity HBV Loop-Mediated Isothermal Amplification", Biosensors and Bioelectronics, 32 (2012) 89– 95 (SCI IF=5.361 , 5-year IF=5.397)
3. S.-C. Hsieh, C.-C. Chang, C.-C. Lu, C.-F. Wei, C.-S. Lin, H.-C. Lai and C.-W. Lin, "Rapid Identification of Mycobacterium Tuberculosis Infection by a New Array-Format Based Surface Plasmon Resonance Method", Nanoscale Research Letters , 7 (2012), 180-185 (SCI IF=2.557, 5-year IF=2.273)
4. C.-C. Chen, T.-H. Hung, Y.-H. Wang, C.-W. Lin, P.-Y. Wang, et al. ",Wogonin Improves Histological and Functional Outcomes, and Reduces Activation of TLR4/NF-kB Signaling after Experimental Traumatic Brain Injury. ",PLoS ONE ,7 (2012) (SCI IF=4.411, 5-year IF=4.610)
5. Chun Yu, T.-C. Hsiao, C.-W. Lin, "Quantitative Evaluation of Multivariate Analysis Methods for Excitation-Emission Spectroscopy", Biomedical Engineering-Applications Basis and Communications(BME), Accepted on 03/15/2012 (SCI IF=0.2)
6. C.-Y. Chen, C.-C. Chang, C.-W. Lin ",Clinical application of surface plasmon resonance-based biosensors for fetal fibronectin detection", Sensors , 12 (2012) ,3879-3890 (SCI IF=1.774, 5-year IF=1.1919)
7. C.-C. Chang, Shenhsiung Lin, T.-H. Lee, T.-L. Chuang and C.-W. Lin", Amplified Surface Plasmon Resonance Immunosensor for Interferon-gamma Based on a Streptavidin Incorporated Aptamer",Biosensors and Bioelectronics , 37 (2012) 68-74 (SCI IF=5.361 , 5-year IF=5.397)
8. C.-Y. Lin, J.-G. Chen, W.-Y. Feng, C.-W. Lin, J.-W. Huang, James J. Tunney, K.-C. Ho*, "Using a TiO2/ZnO double-layer film for improving the sensing performance of ZnO based NO gas sensor", Sensors and Actuators B-Chemical, 157, (2011) 361-367(SCI IF=3.370, 5-year IF=5.397)
9. C.-C. Chang, S.-S. Lin , S.-C. Wei, C.-Y. Chen, C.-W. Lin*, "An Amplified Surface Plasmon Resonance ",Turn-On", Sensor for Mercury Ion Using Gold Nanoparticles", Biosensors & Bioelectronics, 30, (2011) (SCI IF=5.361 ,5-year IF=5.397)
10. B. T. Chia, S.-A. Yang, M.-Y. Cheng, C.-W. Lin, and Y.-J. Yang*, "A Self-contained Portable Polymerase-Chain-Reaction System Integrated with Electromagnetic Mini-actuators for Bi-directional Fluid Transport", Journal of Mechanics (SCI/EI), 27 ,01 September 2011. (SCI IF=0.408, 5-year IF=0.489)
11. 林啓萬、張家禎、莊琮亮、王大欣、呂慧歆、劉建昇，" ,表面電漿子共振生物感測器之新發展" ,化學 第六十九卷第三期211-221頁 ,2011年08月
12. A.-B. Wang*, C.-W. Cheng, I.-C. Lin, F.-Y. Lu, H.-J. Tsai, C.-C. Lin, C.-H. Yang, P.-T. Pan, C.-C. Kuan, Y.-C. Chen, Y.-W. Lin, C.-N. Chang, Y.-H. Wu, Tetuko Kurniawan, C.-W. Lin, Andrew M. Wo, L.-C. Chen, "A Novel DNA Selection and Direct Extraction (SDE) Process and its Application in

DNA Recombination", Electrophoresis , 32, (2011) 1-8 (SCI IF=3.569, 5-year IF=3.184)

13. C.-C. Chang, S.-S. Lin , Y. C.-Su, C.-W. Lin*, "Using Polyethylene Glycol-Modified Chitosan for Improvement of Carbohydrate Antigen 15-3 Detection on a Quartz Crystal Microbalance Biosensor", Sensor Letters, 9, (2011) 1-5 . (SCI IF=0.602, 5-year IF=0.756)

14. C.-Y. Chen, C.-C. Chang, C. Yu, S.-Y. Yang, and C.-W. Lin*, "Immunomagetic Reduction for Fetal Fibronectin Detection Anovelmethod to Detect the Preterm Biomarker", Biomedical Engineering-Applications Basis and Communications (BME), 23, (2011) 273-278 (SCI) (IF=0.188)

15. M.-C. Chen, David H.-C. Pan, W.-Y. Chung, K.-D. Liu, Y.-S. Yen, M.-T. Chen, T.-T. Wong, Y.-H. Shih, H.-M. Wu, W.-Y. Guo, C.-Y. Shiau, L.-W. Wang, C.-W. Lin, "Gamma Knife Radiosurgery for Central Neurocytoma: Retrospective Analysis of Fourteen Cases with a Median Follow-Up Period of Sixty-Five Months", Stereotactic and Functional Neurosurgery, 89 ,(2011) ,185-193. (SCI IF=1.8829, 5-year IF=1.925)

16. H.-H. Lu; C.-W. Lin, "Preparation of Protein Nanoarray on Silicon Surface by Atomic Force Microscopy Nanofabrication",Journal of Nanoscience and Nanotechnology, 10(7), July 2010 , pp. 4505-4510(6) (SCI) (IF=1.352, 5-year IF=1.563)

17. C.-Y. Lin, Y.-H. Lai, A. Balamurugan, R. Vittal, C.-W. Lin, and K.-C. Ho",Electrode Modified with a Composite Film of ZnO Nanorods and Ag Nanoparticles as a Sensor for Hydrogen Peroxide", Talanta, 82 (2010) 340-347 (SCI) (IF=3.722, 5-year IF=3.487)

18. M.-K. Wei, C.-W. Lin, C.-C. Yang, Y.-W. Kiang, J.-H. Lee and H.-Y. Lin, "Emission Characteristics of Organic Light-Emitting Diodes and Organic Thin-Films with Planar and Corrugated Structures", INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES, 11, 1527-1545 (2010) (SCI) (IF=2.279, 5-year IF=2.118)

19. C.-S. Liu, et.al. ",The differential method of phase space matrix for AF/VF discrimination application", Medical Engineering & Physics 32 (2010) 444-453 (MEP-D-09-00322R1, Apr. 2, 2010) (SCI) (IF=1.909, 5-year IF=2.115)

20. H.-H. Lu, T.-C. Hsiao, S.-M. Hsu, and C.-W. Lin*, "Optical Characterization of a 1-D Nanostructure by Dark-Field Microscopy and Surface Plasmon Resonance to Determine BiomolecularInteractions", IEEE SENSORS JOURNAL, 10: 712-719 (2010) (SCI) (IF=1.473, 5-year IF=1.590)

21. C.-Y. Lin, W.-Y. Feng, C.-W. Lin, J.-W. Wang, J. Tunney, and K.-C. Ho, "Fabrication of NOx gas sensors using In2O3-ZnO composite films", Sensors and Actuators B-Chemical, 146 (2010) 28-34. (SCI) (IF=3.370, 5-year IF=3.340)

22. D.-F. Yang*, H.-H. Lu, B. Chen and C.-W. Lin ",Surface Plasmon Resonance of SnO2/Au Bi-layer Films for Gas Sensing Applications", SENSORS AND ACTUATORS B-CHEMICAL, 24-Jan-2010 SNB-D-09-00776R2, vol145, pp832-838,(SCI) (IF=3.370, 5-year IF=3.340)

23. C.-C. Chang; N.-F. Chiu; David Lin; S.-Y. Chu; C.-W. Lin*, "High-Sensitivity Detection of Carbohydrate Antigen 15-3 Using a Gold/Zinc Oxide Thin Film Surface Plasmon Resonance-Based Biosensor", Analytical Chemistry, Anal. Chem. 2010, 82, 1207-1212 (SCI) (IF=5.874, 5-year IF=5.903)

24. C.-W. Lin, H.-W. Chiu, M.-L. Lin, C.-H. Chang, I-H. Ho, P.-H. Fang, Y.-C. Li, C.-L. Wang, Y.-C. Tsai, Y.-R. Wen, W.-P. Shih, Y.-J. Yang, S.-S. Lu, "Pain Control On Demand Based on Pulsed Radio-Frequency Stimulation of the Dorsal Root Ganglion Using a Batteryless Implantable CMOS SoC", Solid-State Circuits Conference Digest of Technical Papers (ISSCC),12.1 234-235, 7-11 Feb. (2010)

25. J.-G. Huang, Adam S.-Y. Lee, S.-F. Chu, Y.-H. Lin and C.-W. Lin*, "Influence of Constitution of Hybrid Ferrocenyl Alkanethiols Self-assembled Monolayers to Interfacial Characteristics on Gold Surface", Biomedical Engineering-applications Basis Communications, 22(1), 25-31(SCI) (IF=0.188) (2010)

※研討會論文 Conference & proceeding papers

1. T.-L. Chuang, C.-C. Chang, C.-W. Lin , "Integrated Surface Plasmon Resonance Sensor With Streptavidin Incorporated Aptamer for Fast Interferon-gamma Detection", World Congress on Medical Physics Biomedical Engineering (WC2012) Peiking China ,May 26-31 ,2012

2. Y.-Z. Yin, F.-C. Chang, C.-W. Lin , "Application of low cost CPW antenna for biosensing", World Congress on Medical

Physics Biomedical Engineering (WC2012) Peiking China ,May 26-31 ,2012

3. F.-C. Chang, Y.-Z. Yin, C.-W. Lin, "A Novel design of Antenna for biosensing applications", 14th International Meeting on Chemical Sensors(IMCS 2012), May 20 – 23, 2012
4. Y.-Y. Fang, C.-W. Lin ",IrOx and Pt-Ir Electrochemical Sensors: Prospective Enzyme-less pH and Glucose Sensors for Continuous Monitoring in Cell Culture",14th International Meeting on Chemical Sensors(IMCS 2012), May 20 – 23, 2012
5. Y.-H. Lin, H.-H. Lu, C.-W. Lin ",Preparation of meso-tetra(4-pyridyl)porphyrin film for optical gas sensor",14th International Meeting on Chemical Sensors(IMCS 2012), May 20 – 23, 2012
6. T.-L. Chuang, C.-C. Chang, C.-W. Lin ",Integrating Segmented Strip Microfluidic Device with Surface plasmon resonance sensor for IFN-r detection", 14th International Meeting on Chemical Sensors(IMCS 2012), May 20 – 23, 2012
7. 張富傑、徐嘉隆、尹又正、林啓萬",新穎設計之天線型生物感測器",,第17屆化學感測器科技研討會, 2012年5月19日(口頭論文競賽-特優)
8. 張家禎、林聖雄、李忠翰、莊琮亮、林啓萬" ,Sensitive Bifunctional Aptamer-Based Surface Plasmon Resonance Biosensor for Interferon-γ " , 第17屆化學感測器科技研討會, 2012年5月19日(口頭論文競賽-優等)
9. 林珍岑、呂慧歆、林啓萬, "以沾筆式奈米微影術於玻璃基材上製造蛋白質奈米陣列" ,第17屆化學感測器科技研討會, 2012年5月19日(口頭論文競賽-優等)
10. 林柏叡、張富傑、林啓萬, "無線氧化鋅VOCs 氣體感測器偵測系統" ,第17屆化學感測器科技研討會, 2012年5月19日(壁報論文競賽-優等)
11. 林玉惠、呂慧歆、林啓萬, MTPyP 紫質薄膜光學性質於鹽酸氣體感測之研究" , ,第17屆化學感測器科技研討會, 2012年5月19日
12. Y.-Y. Fang and C.-W. Lin, "Control Atomic Ratio of Pt-Ir by potentiostatic electrodeposition", IME XIV IME & XVII MPES, Accepted for Oral presentation , April. 11 – 14, 2012, Portuguese
13. H.-K. Yang, P.-J. Shih, S.-I. Huang, C. Yu, C.-W. Lin , "Soft, Wearable and Location-Aware Sensor and its Mobile Application for Monitoring Respiratory Sound", 16th ACCS , Nov. 14-17, 2011,Taiwan
14. Y.-H. Liang, Y.-F. Lin, C.-H. Chuang, J.-B. Chang, C.-W. Lin ",Evaluation of GC/MS Analysis System for Low Concentration Quantitative Determination of Opium", 16th ACCS , Nov. 14-17, 2011,Taiwan (ACCS2011 Best Poster)
15. B.-R. Lin, F.-C. Chang, H.-H. Lu, D.-F. Yang and C.-W. Lin ",Improving Gaseous Sensing Capability of Zinc Oxide Film by Inducing Oxygen Adsorbates", 16th ACCS , Nov. 14-17, 2011,Taiwan
16. Y.-Y. Fang, Y.-C. Hsieh, C.-W. Lin ",A Nonenzymatic Glucose Sensor Based on Platium-Iridium Bimetallic With Nanostructure", 16th ACCS , Nov. 14-17, 2011,Taiwan
17. F.-C. Chang , H.-H. Lu , C. Yu ,Y.-C. Lin, W.-C. Lin, D.-F. Yang ,C.-W. Lin, "A Realtime Wireless Voc Gas Sensor System for Air Quality" , 16th ACCS , Nov. 14-17, 2011,Taiwan
18. T.-L. Chuang, C.-C. Chang ,C.-W. Lin* ",Capillary SPR Sensor for One-Step Mycobacterium Tuberculosis Detection", 16th ACCS , Nov. 14-17, 2011,Taiwan
19. S.-S. Lin ,C.-C. Chang ,C.-W. Lin* ", Reversible Optical Sensor Based on Chitosan Film for The Selective Detection of Copper Ions", 16th ACCS , Nov. 14-17, 2011,Taiwan
20. C.-C. Chang, S.-S. Lin , S.-C. Wei, C.-W. Lin* ",Surface Plasmon Respnace Competition Assay for The Detection of Cysteine", 16th ACCS , Nov. 14-17, 2011,Taiwan
21. S.-C. Wei, T.-L. Chuang, H.-H. Lu, C.-C. Chang, D.-S. Wang, K.-B. Sung, C.-W. Lin ",Detection of Tip-enhanced Fluorescence from Loop-mediated Isothermal Amplification of Hepatitis B Virus by Two-photon Microscopy", EMBS , Nov. 9 ,2011 ,IEEE
22. 林木鍊、吳宏乾、邱意婷、蘇傳宗、施詠勝、林啓萬、吳季華*" , "雷射針灸對下背痛之療效與對血液中 cortisol 變化之研究(Evaluation of Therapeutic Effect of Laser Acupuncture on Low Back Pain and The Analysis of Cortisol)" ,2011生物醫學工程科技研討會,2011年8月
23. 張家禎、林聖雄、魏世忠、林啓萬, "利用雙股 DNA 嵌合劑增強表面電漿共振於銀離子與半胱氨酸之檢測(Surface Plasmon Resonance Detection of Silver Ions and Cysteine Using DNA Intercalator -Based Amplification)" ,2011生物醫學工程科技研討會,2011年

8月

24. 葉嘉仁、林玉惠、呂慧歆、林啓萬,“以沾筆式奈米微影技術製備蛋白質奈米陣列(Fabrication of Protein Nanoarray by Dip-Pen Nanolithography)”,2011生物醫學工程科技研討會,2011年8月

25. 方柏璇、王安邦*、朱蘇煜、林啓萬, “毛細-重力閥門在整合式尿液肌酸酐檢測晶片之研究與應用(Design and Investigation of Capillary-Gravitational Valve in an Integrated Urine-Chip for Creatinine Detection)”, 2011生物醫學工程科技研討會,2011年8月(學生口頭論文競賽特優)

26. 王佳欣、王大欣、林啓萬*、管永恕 “,雙光子螢光相干於綠螢光蛋白參數分析, (Two photon Fluorescence Correlation Spectroscopy Parameter Analysis for Green Fluorescence Protein)”,2011生物醫學工程科技研討會,2011年8月

27. 游濬、鄭鳳翔、蔡子修、黃仕穎、林啓萬, “氣喘自動化哮鳴音分析於診斷之臨床驗證(Clinical Validation of Automatic Wheezing Sound Analysis for Asthma)”,2011生物醫學工程科技研討會,2011年8月

28. 林啓萬、呂學士、邱弘緯、楊燿州、施文彬 、嚴震東、林木鍊、溫永銳、廖佳琦、張季衡、林威佐、張碩文、黃肯、莊家民、賈婷婷、蔡耀全、吳承曦 “,植入式脈衝射頻電刺激電生理及長期植入驗證”, 2011生物醫學工程科技研討會,2011年8月

29. H.-H. Lu, C.-J. Yeh, Y.-H. Lin, C.-W. Lin, “Joseph Zyss, Disk-Based Protein Nanoarray Using Dip-Pen Nanolithography”, 22nd Micromechanics and Micro systems Europe Workshop, Tonsberg, Norway, Jun 19-22, 2011

30. S.-C. Hsieh*, C.-C. Chang*, H.-C. Lai, C.-W. Lin, “ Rapid identification of Mycobacterium tuberculosis infection by a new array-format based surface plasmon resonance method”, IEEE INEC ,June 21-24 ,2011.

31. C.-C. Li, T.-C. Chen, C.-Y. Chang, C.-Su Yu, C.-S. Liu, T.-H. Cheng, C.-W. Lin, and L.-G. Chen, “Two-dimension Gaussian-modeled Vessel Extraction for Visualized Venipuncture Assisting System”, DSP 2011, July 5-8, 2012

32. C.-C. Chang, S.-S. Lin , S.-C. Wei, C.-W. Lin, “Hairpin DNA sensor for Mercury ION Based on Amplification of Gold Nanoparticle”, ICAS 2011, May 22-27,Japan

33. C.-T. Wu, L. Ding, Y.-C. Tsai, W.-T. Lin, T.-C. Chen, W.-P. Shih, C.-W. Lin, “An Implantable Bipolar Spine Stimulating Probe with Bio-inspired Adhesive Microtubes”, MEMS ,Aug. 8 ,2011

34. C.-H. Chang, T.-C. Chen, W.-T. Lin, M.-L. Lin, W.-P. Shih, S.-S. Lu, Y.-R. Wen* ,C.-W. Lin*”,LONG-TERM IMPLAMTATION OF PRF SoC in RAT for PAIN TREATMENT”, IEEE INEC ,June 21-24,2011.

35. C.-J. Yeh, H.-H. Lu, C.-W. Lin, “Direct Molecular Detection by Gold Nanoparticles Embedded Grating Structure on Optical Disks”, The 5th International Conference on Surface Plasmon Photonics, Korea, May 15-20 ,2011

36. Y.-R. Wen, M.-L. Lin, C.-W. Lin, S.-H. Huang, “The Analgesic Action of Pulsed Radiofrequency applied to Dorsal Root Ganglion on Neuropathic Pain in Rats”,The International Conference on Pain-Free Hospital Promotion and Establishment in Taiwan 2010; 2010「疼痛照護優質醫院」推廣及建構國際研討會, 汐止國泰綜合醫院

37. C.-C. Chen, D.-H. Wang, C.-W. Lin, S.-F. Chen, F.-K. Liu, “LIVING MUSCLE TISSUES IMAGING WITH AUTOFLUORESCENCE BY USING TWO PHOTON LASER EXCITATION MICROSCOPY (TPEM)”, 2nd Asia-Oceanian Conference of Physical and Rehabilitation Medicine, Taipei, Apr 29-May 2,2010

38. C.-W. Lin,“多變數分析於陣列式氣體感測器之分類辨識與定量量測” ，2010生物醫學工程科技研討會

39. C.-W. Lin, “無線氣體監控感知系統於人體健康與環境安全之應用開發” ，2010生物醫學工程科技研討會

40. C.-W. Lin, “以螢光相干光譜技術定量奈米金桿之濃度” ，2010生物醫學工程科技研討會

41. C.-W. Lin, “具奈米金粒子增強之髮夾型核酸汞離子感測器”, 2010生物醫學工程科技研討會

42. C.-Y. Chiang, H.-H. Chen, T.-C. Chen, C.-S. Liu, Y.-J. Huang, S.-S. Lu, C.-W. Lin, L.-G. Chen, “Analysis and Design of On-sensor ECG Processors for Realtime Detection of VF, VT, and PVC”, SiPS 2010, San Francisco, Oct. 6-8, 2010

43. Y.-R. Wen, M.-L. Lin, C.-W. Lin, S.-H. Huang, “The analgesic action of pulsed radiofrequency (PRF) applied to dorsal root ganglion (DRG) neuropathic pain in rats: a pilot “,pain chip”, study”, Third International Congress on Neuropathic Pain, Athens, Greece (May 28, 2010)

44. C.-S. Liu, T.-Y. Wen, D.-S. Wang, C.-W. Lin*, "The studies of Schottky-diode based co-plane detector for surface plasmon resonance sensing", SPIE NanoScience + Engineering 2010, San Diego (Accepted for oral presentation)

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※學術期刊論文 Journal articles & book chapters

1. Jyrk Ahveninen, Iiro Jääskeläinen, John W. Belliveau, Matti S. Hämäläinen, Fa-Hsuan Lin, Tommi Raij, "Dissociable influences of auditory object vs. spatial attention on visual system oscillatory activity",PLoS ONE (in press) 2012
2. KevinWen-KaiTsai, Aapo Nummenmaa,Thomas Witzel, Wei-Tang Chang, Fa-Hsuan Lin, "Multi-projection magnetic resoance inverse imaging of the human visuomotor system", NeuroImage (in press) 2012
3. Wei-Tang Chang, Seppo P. Ahlfors, Fa-Hsuan Lin, "Sparse current source estimation using loose orientation constraint", Human Brain Mapping (in press) 2012
4. Fa-Hsuan Lin, Kevin Wen-Kai Tsai, Ying-Hua Chu, Thomas Witzel, Aapo Nummenmaa, Tommi Raij, Jyrki Ahveninen, John W. Belliveau, ",Ultrafast inverse imaging techniques for fMRI", NeuroImage (in press) 2012
5. Simo Särkkä, Arno Solin, Aapo Nummenmaa, Aki Vehtari, Toni Auranen, Simo Vanni, Fa-Hsuan Lin, ",Dynamic Retrospective Filtering of Physiological Noise in BOLD fMRI: DRIFTER", NeuroImage (in press) 2012
6. Fa-Hsuan Lin, Thomas Witzel, Gerrit Schultz, Daniel Gallichan, Wen-Jui Kuo, Fu-Nien Wang, Juergen Hennig, Maxim Zaitsev, John W. Belliveau, ",Reconstruction of MRI data encoded by multiple non-bijective curvilinear magnetic fields", Magn Reson Med (in press) 2012
7. Fa-Hsuan Lin, Aapo Nummenmaa, Thomas Witzel, Jonathan Polimeni, Thomas A Zeffiro, Fu-Nien Wang, John W. Belliveau, "Physiological Noise Reduction Using Volumetric Functional Magnetic Resonance Inverse Imaging", Human Brain Mapping (in press)2012
8. Jyrki Ahveninen, Matti Hämäläinen, Iiro P. Jääskeläinen, Seppo P. Ahlfors, Samantha Huang, Fa-Hsuan Lin, Tommi Raij, Mikko Sams, Christos E. Vasios, John W. Belliveau, "Attention-driven auditory cortex short-term plasticity helps segregate relevant sounds from noise", Proc Natl Acad Sci USA., (2011) 108 (10), 4182-4187
9. Shr-Tai Liu, Thomas Witzel, Aapo Nummenmaa, Wei-Tang Chang, Kevin Wen-Kai Tsai, Wen-Jui Kuo, Hsiao-Wen Chung, Fa-Hsuan Lin, "Functional magnetic resonance inverse imaging of human visuomotor systems using eigenspace linearly constrained minimum amplitude (eLCMA) beamformer", NeuroImage, (2011), 55 (1), 87-100
10. Seppo P. Ahlfors, Jooman Han, Fa-Hsuan Lin, Thomas Witzel, John W. Belliveau, Matti S. Hamalainen, Eric Halgren, "Cancellation of EEG and MEG signals generated by extended and distributed sources", Human Brain Mapping, 31 (1), 140-149, (2010)
11. Fa-Hsuan Lin, Thomas Witzel, Wei-Tang Chang, Kevin Wen-Kai Tsai, Yen-Hsiang Wang, Wen-Jui Kuo, John W. Belliveau, "K-space reconstruction of magnetic resonance inverse imaging (K-InI) of human visuomotor systems", NeuroImage, 49 (4), 3086-3098 (2010)
12. Tommi Raij, Jyrki Ahveninen, Fa-Hsuan Lin, Thomas Witzel, Iiro P. Jaaskelainen, Bejamin Letham, Emily Israeli, Cherif Sahyoun, Christos Vasios, Steven Stufflebeam, Matti Hamalainen, John W. Belliveau",Onset timing of cross-sensory activations and multisensory interactions in auditory and visual sensory cortices", European Journal of Neuroscience, 1-11, (2010)
13. Wei-Tang Chang, Aapo Nummenmaa, Jen-Chuen Hsieh, Fa-Hsuan Lin, "Spatially sparse source cluster modeling by Compressive Neuromagnetic Tomography", NeuroImage, , 53 (4), 146-160, (2010)

※研討會論文 Conference & proceeding papers

1. Kevin W.-K. Tsai, Thomas Witzel, Tommi Raij, Jonathan Polimeni, Jyrki Ahveninen, Wen-Jui Kuo, John W. Belliveau, Fa-Hsuan Lin, "Hemodynamic Response Timing in Human Lateral Geniculate Nucleus and Visual Cortex",Proc. Intl. Soc. Mag. Reson. Med. (2012); 722
2. Ying-Hua Chu, Boris Keil, Wei-Chao Chen, Wen-Jui Kuo, Fa-Hsuan Lin , "A 32-Channel Head Coil Array with Circularly Symmetric Geometry for 2D Accelerated 3D Human Brain Imaging", Proc. Intl. Soc. Mag. Reson. Med. (2012); 2786
3. Kevin W.-K. Tsai, Thomas Witzel, Wen-Jui Kuo, Fa-Hsuan Lin, "Multi-Echo Magnetic Resonance Inverse Imaging Improves the Sensitivity of BOLD Signal Detection", Proc. Intl. Soc. Mag. Reson. Med. (2012); 2063
4. Simo Särkkä, Arno Solin, Aapo Nummenmaa, Aki Vehtari, Toni Auranen, Simo Vanni, Fa-Hsuan Lin, "Identification of Spatio-Temporal Oscillatory Signal Structure in Cerebral Hemodynamics Using DRIFTER", Proc. Intl. Soc. Mag. Reson. Med. (2012); 2842
5. Hsuan-Chung Niu, Ying-Hua Chu, Jo Lee, Wei-Chao Chen, Wen-Jui Kuo, Fa-Hsuan Lin, "A Localized 16-Channel Linear Planar Array for 3T

Human Brain Imaging", Proc. Intl. Soc. Mag. Reson. Med. (2012); 2649

6. Panu T. Vesanen, Jaakko O. Nieminen, Koos C. J. Zevenhoven, Juhani Dabek, Juho Luomahaara, Juha Hassel, Jari Penttilä, Andrey V. Zhdanov, Fa-Hsuan Lin, Yi-Cheng, Hsu, Lauri T. Parkkonen, Juha Simola, Anitt I. Ahonen, Risto J. Ilmoniemi, "A 72-Channel Whole-Head System for Combined Ultra-Low-Field MRI and Magnetoencephalography", Proc. Intl. Soc. Mag. Reson. Med. (2012); 2745
7. Yi-Cheng Hsu, I-Liang Chern, Fa-Hsuan Lin, "Spatially Selective RF Quadratic Fields Excitation", Proc. Intl. Soc. Mag. Reson. Med. (2012); 3452
8. Yi-Cheng Hsu, Panu T. Vesanen, Jaakko O. Nieminen, Koos C. J. Zevenhoven, Juhani Dabek, I-Liang Chern, Risto J. Ilmoniemi, Fa-Hsuan Lin, "Efficient Concomitant Field Artifacts Reduction Using a Hybrid Space-Frequency Domain Formulism", Proc. Intl. Soc. Mag. Reson. Med. (2012); 2474
9. Wei-Tang Chang, Jyrki Ahveninen, Fa-Hsuan Lin, "Sparse Source Cluster Reconstruction by Compressed Magnetic Resonance Inverse Imaging", Proc. Intl. Soc. Mag. Reson. Med. (2012); 2218
10. Fa-Hsuan Lin, Thomas Witzel, Aapo Nummenmaa, Panu Vesanen, Risto J. Ilmoniemi, John W. Belliveau, "Multi-Dimensional Encoded (MDE) Magnetic Resonance Imaging", Proc. Intl. Soc. Mag. Reson. Med. (2011); 480
11. Tsung-Min Huang, Thomas Witzel, Wen-Jui Kuo, Fa-Hsuan Lin, "Iterative Self-Consistent Magnetic Resonance Inverse Imaging", Proc. Intl. Soc. Mag. Reson. Med. (2011); 486
12. Wei-Tang Chang, Thomas Witzel, Kevin Wen-Kai Tsai, Wen-Jui Kuo, Fa-Hsuan Lin, "Ultra-Fastf MRI of Human Visual Cortex using Echo-Shifted Magnetic Resonance Inverse Imaging", Proc. Intl. Soc. Mag. Reson. Med. (2011); 631
13. Su-Chun Huang, Chih-Min Liu, Hai-Go Hwu, Chen-Chung Liu, Fa-Hsuan Lin, Wen-Yih Isaac Tseng,"Correlating Functional & Structural Connectivity of Default Mode Network with Dosage of Two Candidate Vulnerability Genes of Schizophrenia",Proc. Intl. Soc. Mag. Reson. Med. (2011); 4349
14. Kevin Wen-Kai Tsai, Aapo Nummenmaa, Thomas Witzel, Wei-Tang Chang, Wei-Jui Kuo, Fa-Hsuan Lin, "Dynamic Magnetic Resonance Multi-Projection InverseImaging (Mini) with Isotropic Spatial Resolution", Proc. Intl. Soc. Mag. Reson. Med. (2011); 632
15. Simo Sarkka, Aapo Nummenmaa, Arno Solin, Aki Vehtari, Thomas Witzel, Toni Auranen, Simo Vanni, Matti S. Hamalainen, Fa-Hsuan Lin, "Dynamical Statistical Modeling of Physiological Noise for Fast BOLD fMRI", Proc. Intl. Soc. Mag. Reson. Med. (2011); 3592
16. Tsung-Min Huang, Thomas Witzel, Wen-Jui Kuo, Fa-Hsuan Lin, "Iterative Self-Consistent Magnetic Resonance Inverse Imaging", Proc. Intl. Soc. Mag. Reson. Med. (2011); 486
17. Hsiang-Wei Ho, Shang-Yueh Tsai, Yi-Ru Lin, Stefan Posse, Fa-Hsuan Lin, "Mapping T2 Relaxation Time of Cerebral Metabolites using Three Dimensional Proton-Echo Planar Spectroscopic Imaging(PEPSI)", Proc. Intl. Soc. Mag. Reson. Med. (2011); 1393
18. Fa-Hsuan Lin, Thomas Witzel, Aapo Nummenmaa, Panu Vesanen, Risto J. Ilmoniemi, John W. Belliveau, "Multi-Dimensional Encoded (MDE) Magnetic Resonance Imaging",Proc. Intl. Soc. Mag. Reson. Med. (2011); 480
19. Thomas Witzel, Jonathan Polimeni, Fa-Hsuan Lin, " Aapo Nummenmaa, Lawrence L. Wald,Single-Shot Whole Brain Echo Volume Imaging for Temporally Resolved Physiological Signals in fMRI" , Proc. Intl. Soc. Mag. Reson. Med. (2011); 633
20. Fa-Hsuan Lin, Jonathan R. Polimeni, Kevin Wen-Kai Tsai, Thomas Witzel, Wei-Tang Chang, Wen-Jui Kuo, John W. Belliveau, "The Limit of Relative Timing Accuracy of BOLD fMRI in Human Visual Cortex", Proc. Intl. Soc. Mag. Reson. Med. (2011); 3582
21. Fa-Hsuan Lin, Panu Vesanen, Jaakko O. Nieminen, John W. Belliveau, Risto J. Ilmoniemi, "Theoretical Signal-to-Noise Penalty in Parallel Ultra-Low-Field Magnetic Resonance Imaging", Proc. Intl. Soc. Mag. Reson. Med. (2011); 4401
22. Wei-Tang Chang, Thomas Witzel, Kevin Wen-Kai Tsai, Wen-Jui Kuo, Fa-Hsuan Lin, "Ultra-Fastf MRI of Human Visual Cortex using Echo-Shifted Magnetic Resonance Inverse Imaging",Proc. Intl. Soc. Mag. Reson. Med. (2011); 631
23. Panu Tapani Vesanen, Juha Hassel, Jari S. Penttila, Jaakko Oskari Nieminen, Juhani Dabek, Koos Zevenhoven, Juho

Luomahaara, Sarianna Alanko, Nadia Catallo, Fa-Hsuan Lin, Juha Simola, Antti Ahonen, Risto J. Ilmoniemi, "Ultra-Low-Field MRI System for Hybrid MEG-MRI",Proc. Intl. Soc. Mag. Reson. Med. (2011); 3810

24. Shr-Tai Liou, Hsiao-Wen Chung, Wei-Tang Chang, Wen-Kai Tsai, Fa-Hsuan Lin, "Virtually Independent Gaussian Channel Nulling (VIPGen) Image Reconstruction for Functional Magnetic Resonance Inverse Imaging (FMRInI)", Proc. Intl. Soc. Mag. Reson. Med. (2011); 2894.pdf

25. Akio Yoshimoto, Chenguang Zhao,Kaung-Ti Yung, Weili Zheng, Elena Ackley, Stephen Dager, John Vanmeter, Ulrike Dydak, Keith Heberlein, Shang-Yueh Tsai, Fa-Hsuan Lin, Lawrence L. Wald, Andre van der Kouwe, Juan Bustilo, Stefan Posse, "3D High Spatial Resolution Short TE Proton-Echo-Planar-Spectroscopic-Imaging (PEPSI) at 3T in Clinically Feasible Measurement Times",Proc. Intl. Soc. Mag. Reson. Med. (2010); 3352

26. Akio Yoshimoto, Andre van der Kouwe, Fa-Hsuan Lin, Lawrence L. Wald, Stefan Posse, "Cerebrospinal Fluid Partial Volume Correction in Quantitative Short TE Magnetic Resonance Spectroscopic Imaging", Proc. Intl. Soc. Mag. Reson. Med. (2010); 3353.pdf

27. Shr-Tai Liu, Hsiao-Wen Chung, Wei-Tang Chang, Fa-Hsuan Lin, "Eigenspace Minimum L1-Norm Beamformer Reconstruction of Functional Magnetic Resonance Inverse Imaging of Visuomotor Processing", Proc. Intl. Soc. Mag. Reson. Med. (2010); 1155

28. Su-Chun Huang, Fang-Chen Yeh, Hai-Go Hwu, Chih-Min Liu, Chen-Chung Liu, Fa-Hsuan Lin, Wen-Yih Isaac Tseng, "Functional and Structural Connectivity of Default Mode Network in Patients with Schizophrenia: A Combined Resting-State FMRI and Diffusion Spectrum Imaging Study", Proc. Intl. Soc. Mag. Reson. Med. (2010); 282

29. Kevin Wen-Kai Tsai, Thomas Witzel, Fa-Hsuan Lin, "Magnetic Resonance Multi-View Inverse Imaging (MV InI) for Human Brain", Proc. Intl. Soc. Mag. Reson. Med. (2010); 4898

30. Fa-Hsuan Lin, Panu Vesnan, Thomas Witzel, Risto Ilmoniemi, Juergen Hennig, "Parallel Imaging Technique Using Localized Gradients (PatLoc) Reconstruction Using Compressed Sensing (CS)", Proc. Intl. Soc. Mag. Reson. Med. (2010); 546

31. Fa-Hsuan Lin, Thomas Witzel, Tommi Raij, Jyrki Ahveninen, John W. Belliveau, "Relative Timing of Brain Activations Revealed by Ultra-Fast MR Inverse Imaging (InI)", Proc. Intl. Soc. Mag. Reson. Med. (2010); 268

32. Hsuan-Chung Nui, Hsiao-Wen Chung, Teng-Yi Huang, Fa-Hsuan Lin, "Slice Shimming Method for Reduction of Susceptibility Artifacts with PatLoc System", Proc. Intl. Soc. Mag. Reson. Med. (2010); 1543

33. Aapo Nummenmaa, Matti Hamalainen, Fa-Hsuan Lin, "Time Dependent Regularization for Functional Magnetic Resonance Inverse Imaging", Proc. Intl. Soc. Mag. Reson. Med. (2010); 4897

※專書 Books

1. Matti S Hamalainen, Fa-Hsuan Lin, and John Mosher, "Anatomically and functionally constrained minimum norm estimates",, in ",MEG: an introduction to methods",, Ed: Peter C. Hansen, Morten L. Kringelbach, Riitta Samelin, 2010, Oxford university press.

2. Fa-Hsuan Lin, and Shang-Yueh Tsai, " Parallel magnetic resonance imaging acquisition and reconstruction: application to functional and spectroscopic imaging in human brain",Methods of cancer diagonsis, therapy, and prognosis: brain cancer, Ed: M. A. Hayat, 2010, Springer.

呂學一教授 Hsueh-I Lu, professor

※學術期刊論文 Journal articles & book chapters

1. Tsung-Hao Liu and Hsueh-I Lu, "Minimum cycle bases of weighted outerplanar graphs.",Information Processing Letters 110(21): 970-974, 2010.

2. Hsueh-I Lu, "Improved Compact Routing Tables for Planar Networks via Orderly Spanning Trees.", SIAM Journal on Discrete Mathematics 23(4):2079-2092, 2010.

※研討會論文 Conference & proceeding papers

1. Hsien-Chih Chang and Hsueh-I Lu, "A faster algorithm to recognize even-hole-free graphs.", Proceedings of the Twenty-Third Annual ACM-SIAM Symposium on Discrete Algorithms, pages 1286-1297, 2012.

2. Hsien-Chih Chang and Hsueh-I Lu, "Computing the Girth of a Planar Graph in Linear Time", Proceedings of the 17th Annual International Conference on Computing and Combinatorics, pages 225-236, 2011

孫啓光教授 Chi-Kuang Sun, Professor

※學術期刊論文 Journal articles & book chapters

1. C.-K. Sun*, "Special Issue for the Thirteenth International Conference Oh Phonon Scattering in Condensed Matter Preface", Chinese Journal of Physics, 49 (1), I-II, 2011
2. Y.-C. Wen, J.-H. Sun, T.-T. Wu, C. Dais, D. Grützmacher, and C.-K. Sun*, "Investigation of Phononic Bandgap in a 3D Quantum-Dot Crystal", Chinese Journal of Physics, 49 (1), 77-83, 2011
3. T.-M. Liu, S.-Z. Sun, C.-F. Chang, G.-T. Chen, C.-C. Pan, J.-I. Chyi, and C.-K. Sun*, "Roles of Dislocation Density to the Scattering of Nano-acoustic Waves in GaN", Chinese Journal of Physics, 49 (1), 171-175, 2011
4. Y.-H. Chen, Y.-C. Wen, W.-R. Liu, W.-F. Hsieh, and C.-K. Sun*, "Acoustic Velocity and Optical Index Birefringence in A-Plane ZnO Thin Film", Chinese Journal of Physics, 49 (1), 201-208, 2011
5. Buttino, J.-S. Hwang, C.-K. Sun*, C.-T. Hsieh, T.-M. Liu, D. Pellegrini, A. Ianora, D. Sartori, G. Romano, S.-H. Cheng, and A. Miralto, "Apoptosis to predict copepod mortality: state of the art and future perspectives", Hydrobiologia, 666, 257-264, 2011
6. Y.-E. Su, Y.-C. Wen, Y.-L. Hong, H.-M. Lee, S. Gwo, Y.-T. Lin, L.-W. Tu, H.-L. Liu, and C.-K. Sun*, "Using hole screening effect on hole-phonon interaction to estimate hole density in Mg-doped InN", Applied Physics Letters, 98, 252106, 2011
7. Y.-E. Su, Y.-C. Wen, Y.-L. Hong, H.-M. Lee, S. Gwo, Y.-T. Lin, L.-W. Tu, H.-L. Liu, and C.-K. Sun*, "Using hole screening effect on hole-phonon interaction to estimate hole density in Mg-doped InN", Virtual Journal of Ultrafast Science, 10 (7), July issue, 2011
8. C.-Y. Ko, M.-Y. Tsai, W.-F. Tseng, C.-H. Cheng, C.-R. Huang, J.-S. Wu, H.-Y. Chung, C.-S. Hsieh, C.-K. Sun*, S.-P. L. Hwang, C.-H. Yuh, C.-J. Huang, T.-W. Pai, W.-S. Tzou, and C.-H. Hu, "Integration of CNS survival and differentiation by HIF2", Cell Death and Differentiation, 18, 1757-1770, 2011
9. Y.-C. Wen, S.-H. Guol, H.-P. Chen, J.-K. Sheu, and C.-K. Sun*, "Femtosecond ultrasonic spectroscopy using a piezoelectric nanolayer: Hypersound attenuation in vitreous silica films", Applied Physics Letters, 99 (5), 051913, 2011
10. Y.-C. Wen, S.-H. Guol, H.-P. Chen, J.-K. Sheu, and C.-K. Sun*, "Femtosecond ultrasonic spectroscopy using a piezoelectric nanolayer: Hypersound attenuation in vitreous silica films", Virtual Journal of Ultrafast Science, 10 (9), September 2011 issue; highlighted by Nature Photonics, 5, 644, 2011
11. M.-R. Tsai, S.-Y. Chen, D.-B. Shieh, P.-J. Lou, and C.-K. Sun*, "In vivo optical virtual biopsy of human oral mucosa with harmonic generation microscopy", Biomedical Optics Express, 2(8), 2317-2328, 2011
12. C.-H. Lai, C.-K. Sun*, and H.-C. Chang, "Terahertz antiresonant-reflecting-hollow-waveguide-based directional coupler operating at antiresonant frequencies", Optics Letters, 36 (18), 3590-3592, 2011
13. H. Chen, C.-M. Chiu, Y.-F. Tsai, T.-F. Tseng, J.-T. Lu, W.-L. Lai, W.-J. Lee, H.-Y. Huang, and C.-K. Sun*, "Performance of THz fiber-scanning near-field microscopy to diagnose breast tumors", Optics Express, 19 (20), 19523-19531, 2011
14. Y.-C. Wen, Y.-C. Liao, H.-H. Chang, B.-H. Mok, Y.-C. Lee, T.-W. Huang, K.-W. Yeh, J.-Y. Luo, M.-J. Wang, C.-K. Sun*, and M.-K. Wu, "Elastic stiffness of single-crystalline FeSe measured by picoseconds ultrasonics", Journal of Applied Physics, 110 (7), 073505, 2011
15. H. Chen, T.-H. Chen, T.-F. Tseng, J.-T. Lu, C.-C. Kuo, S.-C. Fu, W.-J. Lee, Y.-F. Tsai, Y.-Y. Huang, E. Y. Chuang, Y.-J. Hwang, and C.-K. Sun*, "High-sensitivity in vivo THz transmission imaging of early human breast cancer in a subcutaneous xenograft mouse model", Optics Express, 19 (22), 21552-21562, 2011
16. H. Chen, T.-H. Chen, T.-F. Tseng, J.-T. Lu, C.-C. Kuo, S.-C. Fu, W.-J. Lee, Y.-F. Tsai, Y.-Y. Huang, E. Y. Chuang, Y.-J. Hwang, and C.-K. Sun*, "High-sensitivity in vivo THz transmission imaging of early human breast cancer in a subcutaneous xenograft mouse model", Virtual Journal for Biomedical Optics, 6 (11), November 30, 2011 issue, 2011
17. Y.-C. Wen, G.-W. Chern, K.-H. Lin, J. J. Yeh, and C.-K. Sun*, "Femtosecond Optical Excitation of Coherent Acoustic Phonons in a Piezoelectric p-n Junction", Physical Review B, 84 (20), 205315(12), 2011
18. Buttino, D. Pellegrini, G. Romano, J.-S. Hwang, T.-M. Liu, D. Sartori, C.-K. Sun*, S. Macchia, and A. Ianora, "Study of

apoptosis induction in Acartia tonsa nauplii exposed to subchronic concentration of Nickel", Chemistry and Ecology, 27, 97-104, 2011

19. J.-T. Lu, C.-H. Lai, T.-F. Tseng, H. Chen, Y.-F. Tsai, I-J. Chen, Y.-J. Hwang, H.-C. Chang, and C.-K. Sun*, "Terahertz polarization-sensitive rectangular pipe waveguides", Optics Express, 19 (22), pp. 21532-21539, 2011

20. J.-T. Lu, C.-H. Lai, T.-F. Tseng, H. Chen, Y.-F. Tsai, Y.-J. Hwang, H.-C. Chang, and C.-K. Sun*, "Terahertz pipe-waveguide-based directional couplers", Optics Express, 19 (27), pp. 26883-26890, 2011

21. Maznev, K. J. Manke, K.-H. Lin, K. A. Nelson, C.-K. Sun*, and J.-I. Chyi, "Broadband terahertz ultrasonic transducer based on a laser-driven piezoelectric semiconductor superlattice", Ultrasonics, 52 (1), pp. 1-4, 2011

22. S.-H. Chia, T.-M. Liu, A. A. Ivanov, A. B. Fedotov, A. M. Zheltikov, M.-R. Tsai, M.-C. Chan, C.-H.Yu, and C.-K. Sun, "A sub-100fs self-starting Cr:forsterite laser generating 1.4W output power", Optics Express, 18 (23), pp. 24085-24091, Aug. 2010

23. W.-J. Lee, S.-Y. Chen, C.-F. Lee, Y.-S. Chen, and C.-K. Sun*, "Virtual Biopsy of Rat Tympanic Membrane Using Higher Harmonic Generation Microscopy", Journal of Biomedical Optics, 15(4), 046012, Jun. 2010

24. C.-F. Chang, C.-H. Yu, and C.-K. Sun*, "Multi-Photon Resonance Enhancement of Third Harmonic Generation in Human Oxyhemoglobin and Deoxyhemoglobin", Journal of Biophotonics, 3(10-11), pp. 678-658, Jun. 2010

25. S.-H. Chia, C.-H. Yu, C.-H. Lin, N.-C. Cheng, T.-M. Liu, M.-C. Chan, I-H. Chen, and C.-K. Sun*, "Miniaturized Video-Rate Epi-Third-Harmonic-Generation Fiber-Microscope", Optics Express, 18(16),, pp. 17382-17391, Apr. 2010

26. S.-Y. Chen, H.-Y. Wu, and C.-K. Sun*, "In vivo harmonic generation biopsy of human skin", Virtual Journal of Ultrafast Science, 9(1), Jan. 2010

27. C.-H. Lai, B. You, J.-Y. Lu, T.-A. Liu, J.-L. Peng, C.-K. Sun*, and H.-C. Chang, "Modal characteristics of antiresonant reflecting pipe waveguides for terahertz waveguiding", Optics Express, 18 (1), pp. 309-322, 2010

28. Y.-E. Su, Y.-C. Wen , H.-M. Lee , S. Gwo, and C.-K. Sun*, "Observation of sub-100 femtosecond electron cooling time in InN", Applied Physics Letters, 96 (5), 052108, 2010

29. C.-F. Chang, H.-C. Chen, M.-J. Chen, W.-R. Liu, W.-F. Hsieh, C.-H. Hsu, C.-Y. Chen, F.-H. Chang, C.-H. Yu, and C.-K. Sun*, "Direct Backward Third-Harmonic Generation in Nanostructures", Optics Express, 18 (7), pp. 7397-7406, 2010

30. Y.-C. Wen, J.-H. Sun, C. Dais, D. Grützmacher, T.-T. Wu, J.-W. Shi, and C.-K. Sun*, "Three-Dimensional Phononic Nano-Crystal Composed of Ordered Quantum Dots", Applied Physics Letters, 96 (12), 123113, 2010

31. Y.-W. Huang, T.-F. Tseng, C.-C. Kuo, Y.-J. Hwang, and C.-K. Sun*, "Fiber-based swept-source terahertz radar", Optics Letters, 35 (9), pp. 1344-1346, 2010

32. S.-H. Guol, M.-G. Chou, Y.-J. Yang, C.-K. Sun*, and J.-W. Shi, "GaAs-Based Transverse Junction Superluminescent Diodes with Strain-Compensated InGaAs/GaAsP Multiple-Quantum-Wells at 1.1μm Wavelength", IEEE Photonics Technology Letters, 22 (12), pp. 917-919, 2010

33. S.-Y. Chen, S.-U. Chen, H.-Y. Wu, W.-J. Lee, Y.-H. Liao, and C.-K. Sun*, "In Vivo Virtual Biopsy of Human Skin by Using Noninvasive Higher Harmonic Generation Microscopy", IEEE Journal of Selected Topics in Quantum Electronics, 16 (3), pp. 478-492, 2010

34. C.-Y. Lin, T.-M. Liu, C.-Y. Chen, Y.-L. Huang, W.-K. Huang, C.-K. Sun*, F.-H. Chang, and W.-L. Lin, "Quantitative and qualitative investigation into the impact of focused ultrasound with microbubbles on the triggered release of nanoparticles from vasculature in mouse tumors", Journal of Controlled Release, 146 (3), pp. 291–298, 2010

35. H.-P. Chen, Y.-C. Wen,, Y.-H. Chen, C.-H. Tsai, K.-L. Lee, P.-K. Wei, J.-K. Sheu, and C.-K. Sun*, "Femtosecond laser-ultrasonic investigation of plasmonic fields on the metal/GaN interface", Applied Physics Letters, 97 (20), 201102, 2010

36. Buttino, J.-S. Hwang, C.-K. Sun*, C.-T. Hsieh, T.-M. Liu, D. Pellegrini, A. Ianora, D. Sartori, G. Romano, S.-H. Cheng, and A. Miralto, "Apoptosis to predict copepod mortality: state of the art and future perspectives", Hydrobiologia, 2010

37. J.-T. Lu, Y.-C. Hsueh, Y.-R. Huang, Y.-J. Hwang, and C.-K. Sun*, "Bending loss of terahertz pipe waveguides", Optics Express, 18 (25), pp. 26332-26338, 2010

※研討會論文 Conference & proceeding papers

1. S.-C. Yang, H.-H. Hsiao, H.-P. Chen, P.-K. Wei, H.-C. Chang, and C.-K. Sun, "Enhanced near-field interaction between surface Plasmon polaritons and longitudinal nanoacoustic pulses", Abstract Book of 2012 Taiwan-Japan Nanophotonics and Plasmonic Metamaterials

Workshop (台日雙邊奈米光電及電漿超穎材料研討會), Taipei, Taiwan (Invited Talk), 2012

2. T.-F. Tseng, H. Chen, T.-H. Chen, J.-T. Lu, C.-C. Kuo, S.-C. Fu, W.-J. Lee, Y.-F. Tsai, Y.-Y. Huang, E. Y. Chuang, Y.-J. Huang, and C.-K. Sun, "High-sensitivity in vivo THz mammography of early human breast cancer in a mouse model", Abstract Book of 2012 Taiwan-Japan Nanophotonics and Plasmonic Metamaterials Workshop (台日雙邊奈米光電及電漿超穎材料研討會), Taipei, Taiwan(Best Poster Paper Award), 2012
3. M.-R. Tsai, D.-B. Hsieh, P.-J. Lou, and C.-K. Sun, "Histopathological diagnosis of oral cancer based on higher-harmonic generation microscopy", Abstract Book of 2012 Taiwan-Japan Nanophotonics and Plasmonic Metamaterials Workshop (台日雙邊奈米光電及電漿超穎材料研討會), Taipei, Taiwan, 2012
4. Y.-F. Tsai, H. Chen, C.-M. Chiu, T.-F. Tseng, J.-T. Lu, W.-L. Lai, W.-J. Lee, H.-Y. Huang, and C.-K. Sun, "Performance of THz fiber-scanning near-field", Abstract Book of 2012 Taiwan-Japan Nanophotonics and Plasmonic Metamaterials Workshop (台日雙邊奈米光電及電漿超穎材料研討會), Taipei, Taiwan, 2012
5. J.-T. Lu, T.-M. Liu, C.-J. Huang, H.-C. Lin, C.-L. Kao, H.-P. Yuan, Y.-L. Lin, B.-L. Chiang, C.-F. Chang, L.-T. Wang, J.-R. Wang, T.-N. Luo, Y.-J. E. Chen, H.-P. Chen, and C.-K. Sun, "Remote destruction of viral envelopes through virus-specific low-order microwave-acoustic resonant coupling", Abstract Book of 2012 Taiwan-Japan Nanophotonics and Plasmonic Metamaterials Workshop (台日雙邊奈米光電及電漿超穎材料研討會), Taipei, Taiwan, 2012
6. M.-R. Tsai, Y.-H. Liao, and C.-K. Sun, "Differential diagnosis of pigmented skin lesions based on in vivo higher-harmonic generation", Abstract Book of 2012 Taiwan-Japan Nanophotonics and Plasmonic Metamaterials Workshop (台日雙邊奈米光電及電漿超穎材料研討會), Taipei, Taiwan, 2012
7. H.-Y. Chung, C.-H. Yu, C.-Y. Lin, H.-J. Tsai, and C.-K. Sun, "Miniaturized nonlinear microscopy system with MEMS mirror and mini aspheric lens", Abstract Book of 2012 Taiwan-Japan Nanophotonics and Plasmonic Metamaterials Workshop (台日雙邊奈米光電及電漿超穎材料研討會), Taipei, Taiwan, 2012
8. C.-K. Sun, "In vivo harmonic generation biopsy of human skin", Symposium on Ultrafast Phenomena in Semiconductors and Nanostructures XV, Photonics West, paper 7937-56, San Francisco, CA, U.S.A., 2011
9. S.-Y. Chen, M.-R. Tsai, C.-H. Tsai, Y.-H. Liao, and C.-K. Sun, "In-vivo morphological and quantitative studies of human skin aging by using 1230-nm-based harmonic-generation biopsy", Symposium on Photonics in Dermatology and Plastic Surgery, Photonics West, paper 7883A-02, San Francisco, CA, U.S.A., 2011
10. S.-Y. Chen, M.-R. Tsai, C.-H. Tsai, Y.-H. Liao, and C.-K. Sun, "Molecular third-harmonic generation imaging of melanin with real-level resonance enhancement", Symposium on Multiphoton Microscopy in the Biomedical Sciences XI, Photonics West, paper 7903-8, San Francisco, CA, U.S.A., 2011
11. M.-R. Tsai, D.-B. Shieh, P.-J. Lou, and C.-K. Sun, "Cancer histopathological diagnosis in human oral cavity by using higher-harmonic-generation microscopy", Symposium on Optical Imaging, Therapeutics, and Advanced Technology in Otolaryngology and Head and Neck Surgery, Photonics West, paper 7883C-63, San Francisco, CA, U.S.A., 2011
12. H.-P. Chen, Y.-C. Wen, C.-H. Tsai, K.-L. Lee, P.-K. Wei, J.-K. Sheu, and C.-K. Sun, "Femtosecond laser-ultrasonic investigation of plasmonic fields on embedded interface", Symposium on Photonic and Phononic Properties of Engineered Nanostructures, Photonics West, paper 7946-70, San Francisco, CA, U.S.A., 2011
13. T.-M. Liu, C.-T. Hsieh, Y.-S. Chen, F.-L. Huang, H.-Y. Huang, W.-J. Lee, C.-T. Kung, and C.-K. Sun, "Diagnosing hepatocellular carcinoma with the intensity and the lifetime of two-photon red autofluorescences", Symposium on Multiphoton Microscopy in the Biomedical Sciences XI, Photonics West, paper 7903-105, San Francisco, CA, U.S.A., 2011
14. S.-Y. Chen, Y.-H. Liao, and C.-K. Sun, "In vivo optical virtual biopsy study of skin aging by using higher harmonic generation microscopy", in Program and Abstract Book of Focus on Microscopy, paper P1-A30, pp. 234, Konstanz, Germany, 2011
15. H. Chen, T.-F. Tseng, J.-T. Lu, T.-H. Chen, C.-C. Kuo, S.-C. Fu, W.-J. Lee, Y.-F. Tsai, Y.-Y. Huang, E. Y. Chuang, Y.-J. Hwang, and C.-K. Sun, "High-Sensitivity in vivo THz Fiber-Scanning Mammography of Early Breast Cancer in Nude Mice", in Technical Digest of Conference on Lasers and Electro-Optics/ Quantum Electronics and Laser Science Conference (CLEO/QELS), paper CThV5, Baltimore, MD, U.S.A., 2011
16. Y.-R. Huang, K.-H. Liu, C.-Y. Mou, and C.-K. Sun, "Observation of Slow Relaxation on Nano-Confined Water in Nanoporous

MCM-41 by Terahertz Spectroscopy", Technical Digest of Conference on Lasers and Electro-Optics/ Quantum Electronics and Laser Science Conference (CLEO/QELS), paper JThB109, Baltimore, MD, U.S.A., 2011

17. M.-R. Tsai, D.-B. Shieh, and C.-K. Sun, "Thickness dependent contrast of human oral epithelial nuclei in vivo observed by third-harmonic generation microscopy", Technical Digest of Conference on Lasers and Electro-Optics/ Quantum Electronics and Laser Science Conference (CLEO/QELS), paper JWA113, Baltimore, MD, U.S.A., 2011

18. H.-P. Chen, Y.-C. Wu, J.-K. Sheu, and C.-K. Sun, "Femtosecond excitation of confined acoustic modes in 2-D arrayed GaN nanorods", Technical Digest of Conference on Lasers and Electro-Optics/ Quantum Electronics and Laser Science Conference (CLEO/QELS), paper QWH4, Baltimore, MD, U.S.A., 2011

19. C.-K. Sun, "Octave-spanning widely-tunable fiber sources with a high pulse energy", 16th Opto-Electronics and Communication Conference (OECC), Workshop II, paper I-2-1, Kaohsiung, Taiwan (Invited Speaker), 2011

20. C.-K. Sun, "Harmonic Generation Microscopy for in-vivo clinical applications", The 1st International NanoBio Imaging Workshop, pp. 18, KRISS, Daejeon, Korea (Invited Speaker), 2011

21. J.-T. Lu, C.-H. Lai, H. Chen, T.-F. Tseng, Y.-F. Tsai, Y.-J. Hwang, H.-C. Chang, and C.-K. Sun, "Low loss terahertz air-core pipe waveguide", Technical Digest of 16th Opto-Electronics and Communication Conference (OECC), paper 7C2_1, Kaohsiung, Taiwan (Invited Speaker), 2011

22. C.-C. Chen, H.-M. Huang, T.-C. Lu, H.-C. Kuo, and C.-K. Sun, "Generation and detection of sub-THz shear acoustic waves with m-plane GaN light emitting diode", Book of Abstracts of International Congress on Ultrasonics, pp. 86, Gdańsk, Poland, 2011

23. C.-K. Sun, "Resonant microwave sensing of virus", Program Book of Nanophotonics in Asia 2011, pp. 46-47, Shima, Japan (Invited Speaker), 2011

24. T.-H. Chen, H. Chen, S.-C. Fu, W.-J. Lee, T.-F. Tseng, J.-T. Lu, Y.-F. Tsai, Y.-Y. Huang, E. Y. Chuang, Y.-J. Hwang, and C.-K. Sun, "In Vivo THz Fiber-Scanning Mammography of Early Breast Cancer in Mice", The International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz), paper Th3D1, Houston, TX, U.S.A. (Keynote Speaker), 2011

25. J.-T. Lu, C.-H. Lai, T.-F. Tseng, H. Chen, Y.-F. Tsai, Y.-J. Hwang, and C.-K. Sun, "Square Pipe-Waveguide-Based Terahertz Directional Coupler", The International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz), paper W2B5, Houston, TX, U.S.A., 2011

26. H. Chen, C.-M. Chiu, W.-L. Lai, Y.-F. Tsai, T.-F. Tseng, J.-T. Lu, W.-J. Lee, C.-W. Lin, and C.-K. Sun, "Performance of THz Fiber-Scanning Near-Field Microscopy to Diagnose Breast Tumors", The International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz), paper Th3D2, Houston, TX, U.S.A., 2011

27. C.-K. Sun, "Multi-Harmonic Generation Microscope for Clinical Virtual Biopsy Application", 2011 International Conference on Optical Instrument and Technology (OIT'2011), pp. 3, Beijing, China (Plenary Speaker), 2011

28. C.-K. Sun, "In vivo optical virtual biopsy of human skin with least invasive harmonic generation laser-scanning microscopy", 2011 RCAS-ANNA Symposium on Studies of Nano and Bio-materials using Laser, X-ray and Single Molecule Techniques, paper L10, pp. 10, Taipei, Taiwan (Invited Speaker), 2011

29. P.-A. Mante, M.-H. Lin, H.-Y. Chen, S. Gwo, and C.-K. Sun, "Vibration induced ultrafast modulation of plasmonic properties in 3D nanoparticles superlattice", the 16th International Conference on Photoacoustic and Photothermal Phenomena, paper XV.T.2 pp. 255, Merida, Yucatan, Mexico, 2011

30. C.-K. Sun, "Probe interfacial water molecules by using THz EM and acoustic waves", 7th Asian Conference on Ultrafast Phenomena, Busan, Korea (Invited Speaker), 2011

31. C.-K. Sun, "Clinical THG Biopsy of Human Skin", 2011海峽兩岸第二屆生醫光電學術研討會, Tainan, Taiwan, 2011

32. H. Chen and C.-K. Sun, "Performance of THz fiber-scanning near-field microscopy to diagnose breast tissues", Abstract Book of Cross-Strait Tsinghua Optics and Photonics Workshop兩岸清華光電論壇, paper M2-1, Hsinchu, Taiwan, 2011

33. L. V. Doronina, I. V. Fedotov, O. I. Ivashkina, M. A. Zots, A. A. Voronin, E. Rostova, D. A. Sidorov-Biryukov, A. B. Fedotov, A. A. Ivanov, C.-K. Sun, K. V. Anokhin, and A. M. Zheltikov, "Photonic-crystal fibers for biophotonics", Abstract Book of Cross-Strait Tsinghua Optics and Photonics Workshop兩岸清華光電論壇, paper M3-3, Hsinchu, Taiwan, 2011

34. C.-K. Sun, "Ultrafast optics and its applications in biomedical imaging", Book of Abstract of NTU/PKU EECS Forum臺大北大電機資訊論壇, paper I-2, pp. 6-7, Taipei, Taiwan (Invited Speaker), 2011

35. C.-K. Sun, "Resonant microwave sensing of virus", Symposium on Engineering, Medicine, and Biology Applications (SEMBA)生醫工程應用研討會, paper 2-1, Kaohsiung, Taiwan, 2011

36. Y.-H. Lai, C.-F. Chang, and C.-K. Sun, "Two-Photon Photo-Acoustics with Quantum Dots and Nano-Particles", Proceeding of International Photonics Conference, paper PF-TH-12, Tainan, Taiwan, 2011

37. H. Chen, Y.-F. Tsai, T.-F. Tseng, J.-T. Lu, W.-J. Lee, and C.-K. Sun, "In Vivo Diagnosis of Glucose Level in Type-2 Diabetes Mice by THz Near-Field Microscopy", in Proceeding of International Photonics Conference, paper F-FR-VI4-5, Tainan, Taiwan (Student Paper Award), 2011

38. S.-C. Yang, H.-H. Hsiao, H.-P. Chen, P.-K. Wei, and C.-K. Sun, "Near-Field Interaction between Surface Plasmon Polaritons and Nanoacoustic Waves", in Proceeding of International Photonics Conference, paper C-TH-III1-2, Tainan, Taiwan (Student Paper Award), 2011

39. C.-H. Lai, C.-K. Sun, and H.-C. Chang, "Characteristics of Terahertz Directional Coupler Composed of Antiresonant Reflecting Hollow Waveguides", in Proceeding of International Photonics Conference, paper B-SA-II6-1, Tainan, Taiwan, 2011

40. T.-F. Tseng, C.-H. Lai, J.-T. Lu, Y.-R. Huang, H. Chen, Y.-F. Tsai1, Y.-J. Hwang, and C.-K. Sun, "THz Sub-wavelength fiber-based directional coupler with a high power transfer ratio and a low insertion loss", in Proceeding of International Photonics Conference, paper B-SA-VII8-8, Tainan, Taiwan, 2011

41. H.-P. Chen, Y.-C. Wu, S.-J. Tu, J.-K. Sheu, and C.-K. Sun, "Femtosecond excitation of confined acoustic modes in 2-D arrayed GaN nanorods", in Proceeding of International Photonics Conference, paper A-FR-I3-4, Tainan, Taiwan, 2011

42. P.-A. Mante, H.-Y. Chen, M.-H. Lin, S. Gwo, and C.-K. Sun, "Vibration induced ultrafast modulation of plasmonic properties in 3D gold nanoparticles superlattice", in Proceeding of International Photonics Conference, paper A-SA-I6-1, Tainan, Taiwan, 2011

43. J.-T. Lu, C.-H. Lai, T.-F. Tseng, H. Chen, Y.-F. Tsai, Y.-J. Hwang, H.-C. Chang, and C.-K. Sun, "Terahertz Pipe-Waveguide-Based Directional Couplers", in Proceeding of International Photonics Conference, paper B-TH-II2-2, Tainan, Taiwan (Student Paper Award), 2011

44. C.-K. Sun, Y.-R. Huang, K.-H. Liu, and C.-Y. Mou, "Slow relaxation dynamics of nano-confined water in MCM-41 probed by THz spectroscopy", in Proceedings of 2011 THz Workshop (民國百年兆赫科技研討會), pp. 31, Hsinchu, Taiwan, 2011

45. S.-W. Chu, C.-Y. Dong, T.-M. Liu, Y. Luo, C.-K. Sun, K.-B. Sung, and D.-P. Tsai, "Advances in optical imaging techniques and applications on molecular imaging", Abstract Book of the First Molecular Imaging Center Symposium: Biomedical Molecular Imaging 2011, pp. 27-28, Taipei, Taiwan, 2011

46. H. Chen, T.-H. Chen, T.-F. Tseng, J.-T. Lu, C.-C. Kuo, S.-C. Fu, W.-J. Lee, Y.-F. Tsai, Y.-Y. Huang, E. Y. Chuang, Y.-J. Hwang, and C.-K. Sun, "High-sensitivity in vivo THz mammography of early human breast cancer in a mouse model", Abstract Book of the First Molecular Imaging Center Symposium: Biomedical Molecular Imaging 2011, pp. 39, Taipei, Taiwan, 2011

47. Y.-F. Tsai, H. Chen, T.-F. Tseng, J.-T. Lu, W.-J. Lee, and C.-K. Sun, "In vivo diagnosis of glucose level in type-2 diabetic mice by THz pipe-based microscopy", Abstract Book of the First Molecular Imaging Center Symposium: Biomedical Molecular Imaging 2011, pp. 41, Taipei, Taiwan, 2011

48. H. Chen, C.-M. Chiu, Y.-F. Tsai, T.-F. Tseng, J.-T. Lu, W.-L. Lai, W.-J. Lee, H.-Y. Huang, and C.-K. Sun, "Performance of THz fiber-scanning near-field microscopy to diagnose breast tumors", Abstract Book of the First Molecular Imaging Center Symposium: Biomedical Molecular Imaging 2011, pp. 42, Taipei, Taiwan, 2011

49. M.-R. Tsai, J.-T. Huang, Y.-H. Liao, and C.-K. Sun, "Differential diagnosis of pigmented skin lesions based on in vivo higher-harmonic generation microscopy", Abstract Book of the First Molecular Imaging Center Symposium: Biomedical Molecular Imaging 2011, pp. 43, Taipei, Taiwan, 2011

50. S.-Y. Chou, H.-C. Hsu, S.-Y. Chen, Y.-H. Liao, P.-H. Wang, and C.-K. Sun, "In vivo harmonic generation biopsy for quantitative evaluation in chronological aged skin keratinocytes", Abstract Book of the First Molecular Imaging Center Symposium: Biomedical Molecular Imaging 2011, pp. 44, Taipei, Taiwan, 2011

51. M.-R. Tsai, D.-B. Shieh, P.-J. Lou, and C.-K. Sun, "Histopathological diagnosis of oral cancer based on higher-harmonic

generation microscopy", Abstract Book of the First Molecular Imaging Center Symposium: Biomedical Molecular Imaging 2011, pp. 45, Taipei, Taiwan, 2011

52. T.-M. Liu, C.-J. Huang, J.-T. Lu, H.-C. Lin, C.-L. Kao, H.-P. Yuan, Y.-L. Lin, B.-L. Chiang, C.-F. Chang, L.-T. Wang, J.-R. Wang, T.-N. Luo, Y.-J. E. Chen, H.-P. Chen, and C.-K. Sun, "Remote destruction of viral envelopes through virus-specific low-order microwave-acoustic resonant coupling", Abstract Book of the First Molecular Imaging Center Symposium: Biomedical Molecular Imaging 2011, pp. 46, Taipei, Taiwan, 2011

53. C.-K. Chen, C.-K. Sun, and T.-M. Liu, "Video-rate third-harmonic generation microscopy for blood cell quantification and counts in human skin", Abstract Book of the First Molecular Imaging Center Symposium: Biomedical Molecular Imaging 2011, pp. 47, Taipei, Taiwan, 2011

54. H.-Y. Chung, C.-H. Yu, C.-Y. Lin, H.-J. Tsai, and C.-K. Sun, "Miniaturized nonlinear microscopy system with a MEMS mirror and an aspheric mini-lens", Abstract Book of the First Molecular Imaging Center Symposium: Biomedical Molecular Imaging 2011, pp. 48, Taipei, Taiwan, 2011

55. C.-C. Chen, P.-A. Mante, Y.-C. Wen, J.-K. Sheu, and C.-K. Sun, "Probing interfacial water molecules by sub-nanometer ultrasonic pulse", Abstract Book of the First Molecular Imaging Center Symposium: Biomedical Molecular Imaging 2011, pp. 49, Taipei, Taiwan, 2011

56. C.-Y. Lin, W.-J. Li, T.-D. Wang, S.-Y. Chen, P.-H. Wang, M.-R. Tsai, and C.-K. Sun, "Noninvasive evaluation of diabetes mellitus manifestation in skin using harmonic generation microscopy", Abstract Book of the First Molecular Imaging Center Symposium: Biomedical Molecular Imaging 2011, pp. 52, Taipei, Taiwan, 2011

57. C.-K. Sun, "Nano-Ultrasonics Based on GaN Nano-Layers", Gallium Nitride Materials and Devices V, Photonics West, Invited Speaker, San Francisco, CA, USA, 2010

58. 137. Y.-C. Wen, V. Gusev, Y.-R. Huang, S.-C. Chin, C.-S. Chang, Y.-C. Chang, and C.-K. Sun, "Probing H2O molecular layering structures at solid-water interfaces by femtosecond acoustic pulses", Ultrafast Phenomena in Semiconductors and Nanostructure Materials XIV, Photonics West, Invited Paper, San Francisco, CA, USA, 2010

59. M.-R. Tsai, S.-Y. Chen, C.-K. Sun, "In vivo optical biopsy of human oral cavity with higher-harmonic generation microscopy", Multiphoton Microscopy in the Biomedical Sciences X, Photonics West, San Francisco, CA, USA, 2010

60. T.-M. Liu, C.-T. Hsieh, C.-T. Kung, and C.-K. Sun, "Identify Hepatocellular Carcinoma with Two-photon Fluorescence and Lifetime Imaging Microscopy", 6th Asian Conference on Ultrafast Phenomena, paper P13, pp. 81-82, Taipei, Taiwan, 2010

61. Y.-H. Chen, Y.-C. Wen, W.-F. Hsieh, W.-R. Liu, and C.-K. Sun, "Acoustic Velocity and the Birefringence of Optical Refractive Index in A-Plane ZnO thin films", 6th Asian Conference on Ultrafast Phenomena, paper P17, pp. 89-90, Taipei, Taiwan, 2010

62. H.-P. Chen, Y.-C. Wen, Y.-H. Chen, K.-L. Lee, P.-K. Wei, C.-K. Chang, C.-K. Lee, J.-K. Sheu, and C.-K. Sun, "Femtosecond Laser-Ultrasonic Investigation of Plasmonic Fields on the Metal/GaN Interface with a Nanometer Resolution", 6th Asian Conference on Ultrafast Phenomena, paper P20, pp. 95-96, Taipei, Taiwan, 2010

63. T.-M. Liu, C.-T. Hsieh, K.-W. Hu, K.-Y. Chung, K.-S. Huang, C.-H. Su, C.-K. Sun, and C.-S. Yeh, "Enhancement of Multiphoton Signals with Strong Surface Plasmon Resonance of Au Nanorod in Au/Ag Shell Nanostructures", 6th Asian Conference on Ultrafast Phenomena, paper P26, pp. 107-108, Taipei, Taiwan, 2010

64. Y.-C. Wen, T.-S. Ko, T.-C. Lu, H.-C. Kuo, J.-I. Chyi, and C.-K. Sun, "Coherent transverse acoustic phonons excited ultrafast screening of surface electric field in a-plane GaN", 6th Asian Conference on Ultrafast Phenomena, paper P44, pp. 138, Taipei, Taiwan, 2010

65. Y.-C. Wen, J.-H. Sun, C. Dais, D. Grutzmacher, T.-T. Wu, J.-W. Shi, and C.-K. Sun, "Transient analysis of ultrafast lattice dynamics in three-dimensional SiGe quantum dot crystal", 6th Asian Conference on Ultrafast Phenomena, paper P45, pp. 139, Taipei, Taiwan, 2010

66. Y.-E. Sun, Y.-C. Wen, H.-M. Lee, S. Gwo, and C.-K. Sun, "Sub-100fs carrier dynamics in InN", 6th Asian Conference on Ultrafast Phenomena, paper P49, pp. 146-147, Taipei, Taiwan, 2010

67. H. Chen, C.-C. Kuo, C.-Y. Chen, Y.-W. Hwang, H.-W. Chen, Y.-J. Hwang, and C.-K. Sun, "Attenuation Measurement of Breast Cancer in Nude Mice in Terahertz Frequency Range", 6th Asian Conference on Ultrafast Phenomena, paper P60, pp. 166-167, Taipei, Taiwan, 2010

68. J.-T. Lu, Y.-C. Hsueh, C.-H. Lai, Y.-J. Huang, H.-C. Chang, and C.-K. Sun, "Terahertz Anti-resonant Reflecting Pipe Waveguide", 6th Asian Conference on Ultrafast Phenomena, paper P61, pp. 168-169, Taipei, Taiwan, 2010

69. T.-F. Tseng, Y.-W. Huang, C.-C. Kuo, Y.-J. Huang, and C.-K. Sun, "THz-fiber based swept source imaging radar", 6th Asian Conference on Ultrafast Phenomena, paper P62, pp. 170-171, Taipei, Taiwan, 2010

70. Y.-R. Huang, H.-P. Chen, P.-C. Chiu, J.-I. Chyi, B.-H. Wang, S.-Y. Chen, and C.-K. Sun, "A high-efficiency terahertz photonic transmitter by using a quarter wavelength resonant cavity", 6th Asian Conference on Ultrafast Phenomena, paper P65, pp. 176-177, Taipei, Taiwan, 2010

71. H.-P. Chen, Y.-R. Huang, T.-M. Liu, T.-N. Luo, Y.-J. E. Chen, C.-W. Lai, G.-B. Lee, C.-F. Chang, S.-C. Yeh, C.-H. Wang, and C.-K. Sun, "A Wide Bandwidth Microwave-fluidic Device for Label-free Virus Detection", 6th Asian Conference on Ultrafast Phenomena, paper P74, pp. 194-195, Taipei, Taiwan, 2010

72. S.-H. Guol, M.-L. Lee, H.-W. Huang, J.-K. Sheu, Y.-S. Wu, C.-K. Sun, C.-H. Kuo, C.-J. Tun, J.-W. Shi, "The Enhancement of Bandwidth-efficiency Product in GaN Based Photodiode by Inserting Low-temperature-grown Recombination Center in Photoabsorption Region", 6th Asian Conference on Ultrafast Phenomena, paper P76, pp. 198-199, Taipei, Taiwan, 2010

73. T.-M. Liu, Y.-W. Lee, C.-F. Chang, S.-C. Yeh, C.-H. Wang, S.-W. Chu, and C.-K. Sun, "Second Harmonic Generation Microscopy on the Polyhedral Inclusion Bodies of Nuclear Polyhedrosis Viruses", 6th Asian Conference on Ultrafast Phenomena, paper P81, pp. 208-209, Taipei, Taiwan, 2010

74. T.-M. Liu, M.-C. Chan, I-H. Chen, S.-H. Chia, and C.-K. Sun, "Miniaturized Two-photon Fluorescence and Second Harmonic Generation Microscope with a 24Hz Frame-rate", 6th Asian Conference on Ultrafast Phenomena, paper P82, pp. 210-211, Taipei, Taiwan, 2010

75. M. R. Tsai, S. Y. Chen, D. B. Shieh, P. J. Lou, and C.-K. Sun, "In Vivo Optical Virtual Biopsy of Human Oral Cavity with Harmonic Generation Microscopy", 6th Asian Conference on Ultrafast Phenomena, paper P83, pp. 212-213, Taipei, Taiwan, 2010

76. M.-R. Tsai, C.-H. Chen, and C.-K. Sun, "Third and Second Harmonic Generation Imaging of the Human Articular Cartilage", 6th Asian Conference on Ultrafast Phenomena, paper P84, pp. 214-215, Taipei, Taiwan, 2010

77. T.-M. Liu, A. A. Ivanov, S.-H. Chia, and C.-K. Sun, "Femtosecond Cr:forsterite Laser Generating 1.4W Output Power", 6th Asian Conference on Ultrafast Phenomena, paper P85, pp. 216-217, Taipei, Taiwan, 2010

78. M.-R. Tsai, Y.-W. Chiou, C.-H. Yu, and C.-K. Sun, "Second Harmonic Generation Images of the Collagen in Atrial Myocardium for Atrial Fibrillation Diagnosis", 6th Asian Conference on Ultrafast Phenomena, paper P87, pp. 220-221, Taipei, Taiwan, 2010

79. C.-H. Yu, S.-H. Chia, C.-H. Lin, N.-C. Cheng, T.-M. Liu, M.-R. Tsai, M.-C. Chan, I-H. Chen, and C.-K. Sun, "Higher-Harmonic-Generation Fiber-Endoscope with a Video-Rate and a Sub-Micron Spatial Resolution", 6th Asian Conference on Ultrafast Phenomena, paper P88, pp. 222-223, Taipei, Taiwan, 2010

80. C.-H. Yu, C.-F. Chang, and C.-K. Sun, "Three- and Two-photon Resonantly Enhanced Third Harmonic Generation Spectroscopy in Human Oxy- and Deoxy-hemoglobin", 6th Asian Conference on Ultrafast Phenomena, paper P90, pp. 227-228, Taipei, Taiwan, 2010

81. C.-K. Sun and Y.-C. Wen, "Nano-Ultrasonic Based on GaN Nano-Layers", Gallium Nitride Materials and Devices V, paper 7602-25, San Francisco, CA, USA, 2010

82. 326. Y.-C. Wen, V. Gusev, Y.-R. Huang, S.-C. Chin, C.-S. Chang, Y.-C. Chang, and C.-K. Sun, "Probing H2O molecular layering structures at solid-water interfaces by femtosecond acoustic pulses", Ultrafast Phenomena in Semiconductors and Nanostructure Materials XIV, paper 7600-42, San Francisco, CA, USA, 2010

83. 327. M.-R. Tsai, S.-Y. Chen, D.-B. Hsieh, P.-J. Lou, and C.-K. Sun, "In vivo optical virtual biopsy of human oral cavity with harmonic generation microscopy", Multiphoton Microscopy in the Biomedical Sciences X, paper 7569-55, San Francisco, CA, USA, 2010

84. C.-H. Yu, S.-H. Chia, T.-M. Liu, N.-C. Cheng, M.-C. Chan, I-H. Chen, and C.-K. Sun, "Video-Rate Higher-Harmonic-Generation Fiber-Endoscope with a Sub-Micron Spatial Resolution", Multiphoton Microscopy in the Biomedical Sciences X, paper 7569-51, San Francisco, CA, USA, 2010

85. Y.-R. Huang, H.-P. Chen, P.-C. Chiu, J.-I. Chyi, B.-H. Wang, S.-Y. Chen, and C.-K. Sun, "Terahertz photonic transmitters with a high-gain open-ended rampart slot array antenna", Terahertz Technology and Applications III, paper 7601-14, San Francisco, CA, USA, 2010

86. C.-H. Liu, P.-H. Wang, Y.-C. Wen, S.-H. Guol, C.-M. Lai, H.-C. Lin, P.-R. Chen, J.-W. Shi, J.-I. Chyi, and C.-K. Sun, "Electrical control of the Optical Sensitivity Function for Coherent Acoustic Phonon Detection in Quantum Wells", 13th International Conference on Phonon Scattering in Condensed Matter, paper TuP7, pp. 107, Taipei, Taiwan, 2010

87. Y.-C. Wen, C.-L. Hsieh, K.-H. Lin, H.-P. Chen, S.-C. Chin, C.-L. Hsiao, Y.-T. Lin, C.-S. Chang, Y.-C. Chang, L.-W. Tu, and C.-K. Sun, "Diffuse Scattering of Acoustic Phonons Induced by Atomic-Scale Interface Roughness", 13th International Conference on Phonon Scattering in Condensed Matter, paper MA8, pp. 51, Taipei, Taiwan, 2010

88. 332. T.-M. Liu, S.-Z. Sun, C.-F. Chang, G.-T. Chen, C.-C. Pan, J.-I. Chyi, and C.-K. Sun, "Roles of Dislocation Density to the Scattering of Nano-acoustic Waves in GaN", 13th International Conference on Phonon Scattering in Condensed Matter, paper TuP9, pp. 109, Taipei, Taiwan, 2010

89. Y.-C. Wen, J.-H. Sun, C. Dais, D. Grützmacher, T.-T. Wu, J.-W. Shi, and C.-K. Sun, "Investigations of Phononic Bandgap in a 3D Quantum-Dot Crystal", 13th International Conference on Phonon Scattering in Condensed Matter, paper ThP8, pp. 226, Taipei, Taiwan, 2010

90. H.-P. Chen, Y.-R. Huang, T.-M. Liu, T.-N. Luo, Y.-J. E. Chen, C.-W. Lai, G.-B. Lee, C.-F. Chang, S.-C. Yeh, C.-H. Wang, and C.-K. Sun, "Confined acoustic mode of Influenza A viruses revealed in a wide-bandwidth microwave-fluidic device", 13th International Conference on Phonon Scattering in Condensed Matter, paper ThP32, pp. 250, Taipei, Taiwan, 2010

91. H.-P. Chen, Y.-C. Wen, Y.-H.Chen, K.-L. Lee, P.-K. Wei, C.-K. Chang, C.-K. Lee, and C.-K. Sun, "Enhancing coherent acoustic phonon detection by surface plasmon resonance of metallic nanoslits", 13th International Conference on Phonon Scattering in Condensed Matter, paper ThP19, pp. 237, Taipei, Taiwan, 2010

92. Y.-H. Chen, Y.-C. Wen, C.-W. Cheng, M.-H. Shih, and C.-K. Sun, "Using GaAs Nanorods as Nanoacoustic Fibers for Acoustic Waveguiding", 13th International Conference on Phonon Scattering in Condensed Matter, paper ThP21, pp. 239, Taipei, Taiwan, 2010

93. Y.-H. Chen, Y.-C. Wen, W.- R. Liu, W.-F. Hsieh, and C.-K. Sun, "Acoustic Velocity and Optical Index Birefringence in A-Plane ZnO thin films", 13th International Conference on Phonon Scattering in Condensed Matter, paper TuP16, pp. 116, Taipei, Taiwan, 2010

94. Y.-C. Wen, S.-H. Guol, H.-P. Chen, J.-K. Sheu, and C.-K. Sun, "Spectral Analysis of Coherent Acoustic Phonons Propagating through Vitreous SiO2 Thin Films", 13th International Conference on Phonon Scattering in Condensed Matter, paper TuP55, pp. 155, Taipei, Taiwan, 2010

95. C.-K. Sun, "Probing the interfacial water molecules by using THz nanoultrasonics", 2nd International Symposium on Laser Ultrasonics, Invited Speaker, Bordeaux, France, 2010

96. C.-K. Sun, "Resonant Photon Absorption through Confined Acoustic Phonons in Nanoparticles and Viruses", the International Conference on Coherent and Nonlinear Optics (ICONO-2010) and the International Conference on Lasers, Applicati, Kazan, Russia, 2010

97. C.-K. Sun, "In vivo THz mammography for early breast cancer study in animal models", 3rd Photonics and OptoElectronics Meetings (POEM 2010) in conjunction with the 9th International Conference on Photonics and Ima, Wuhan, China, 2010

98. C.-K. Sun, "In vivo third-harmonic generation biopsy of human skin", Asia Communications and Photonics Conference and Exhibition, Shanghai, China, 2010

99. J.-T. Lu, C.-H. Lai, Y.-R. Huang, Y.-C. Hsueh, Y.-J. Hwang, H.-C. Chang, and C.-K. Sun, "Investigation on Mode Coupling and Bending Loss Characteristics of Terahertz Air-core Pipe Waveguides", 2010中民國物理年會暨研究成果發表會(The Annual Meeting of PSROC), pp. 141, paper EP-141, Tainan, Taiwan, 2010

100. Y.-C. Wen, J.-H. Sun, C. Dais, D. Grützmacher, T.-T. Wu, J.-W. Shi, and C.-K. Sun, "Nano-phononic bandgap induced by three-dimensional ordering of semiconductor quantum dots", 2010中民國物理年會暨研究成果發表會(The Annual Meeting of PSROC), pp. 30, paper A6-4, Tainan, Taiwan, 2010

101. Y.-H. Chen, Y.-C. Wen, C.-W. Cheng, M.-H. Shih, and C.-K. Sun, "Guided Acoustic Waves in GaAs Nanorods", 2010中民國物理年會暨研究成果發表會(The Annual Meeting of PSROC), pp. 173, paper AP-142, Tainan, Taiwan, 2010

102. Y.-E. Su, Y.-C. Wen, H.-M. Lee, S. Gwo, and C.-K. Sun, "Observation of sub-100 femtosecond electron cooling time in InN", 2010中民國物理年會暨研究成果發表會(The Annual Meeting of PSROC), pp. 102, paper BP-088, Tainan, Taiwan, 2010

孫維仁教授 Wei-Zen Sun, Professor

※學術期刊論文 Journal articles & book chapters

1. Yu-Chang Yeh, Ming-Jiuh Wang, Anne Chao, Wen-Je Ko, Wing-Sum Chan, Shou-Zen Fan, Jui-Chang Tsai, Wei-Zen Sun*", Correlation between early sublingual small vessel density and late blood lactate level in critical ill surgical patients. J Surg Res, May 21, 2012.
2. Wei-Zen Sun*", Comprehensive enough? Role of multidimentional inventories in managing migraine. Acta Anaesthesiol Taiwan, April 4, 2012.
3. Yu-Chang Yeh, Wei-Zen Sun, Wen-Je Ko, Wing-Sum Chan, Shou-Zen Fan, Jui-Chang Tsai, Tzu-Yu Lin*", Dexmedetomidine prevents alterations of intestinal microcirculation that are induced by surgical stress and pain in a novel rat model. Anesth Analg, April 13, 2012.
4. Feng-Sheng Lin, Wen-Ying Lin, Chien-Yu Chen, Chih-Peng Lin, Tzu-Fu Lin, Wei-Zen Sun*", Differential analgesic synergism between tramadol and propoxyphene with acetaminophen for mild postoperative wound pain. Acta Anaesthesiol Taiwan, April 4, 2012.
5. Yu-Chang Yeh, Wen-Je Ko, Chih-Peng Lin, Shou-Zen Fan, Jui-Chang Tsai, Wei-Zen Sun*",Enoxaparin sodium prevents intestinal microcirculatory dysfunction in endotoxemic rats. Critical Care, 16(2), R59, 2012.
6. Man-Ling Wang, Chun-Yi Dai, Matthew Huei-Ming Ma, Kuan-Wu Chang, Chih-Peng Lin*, Wei-Zen Sun*", Direct endotracheal intubation through a novel detachable optic probe (Sunscope®) among emergency medical technicians with variable training backgrounds. Acta Anaesthesiol Taiwan, 50(1):7-11, 2012.
7. Meng-Han Yang, Peng-Hui Wang, Shuu-Jiun Wang, Wei-Zen Sun, Yen-Jen Oyang, Jong-Ling Fuh*",Women with endometriosis are more likely to suffer from migraines: a population-based study. PLoS ONE, 7(3):e33941, March 19, 2012.
8. Chih-Peng Lin, Wen-Ying Lin, Feng-Sheng Lin, Wei-Zen Sun*", Efficacy of intrathecal drug delivery system for refractory cancer pain patients: a single tertiary medical center experience. J Formos Med Assoc, 111(3): March 17, 2012.
9. Yu-Chang Yeh, Wen-Je Ko, Kuang-Cheng Chan, Shou-Zen Fan, Jui-Chang Tsai, Ya-Jung Cheng*, Wei-Zen Sun*", Investigating the effect of Toll-like receptor 4 antagonist, Eritoran tetrasodium, on intestinal microcirculation in endotoxemia with a novel rat model. Shock, 37(5):556-61, 2012.
10. Yeong-Ray Wen, Chih-Peng Lin, Ming-Dar Tsai, Jui-Yuan Chen, Chih-Chun Ma, Wei-Zen Sun*, Chia-Chuan Wang*", Combination of nerve blockade and intravenous alfentanil is better than single treatment in postoperative pain. J Formos Med Assoc, 111(2):101-8, 2012.
11. Ming-Cheng Chang, Chien-Nan Lee, Yu-Li Chen, Ying-Cheng Chiang, Wei-Zen Sun, Wen-Fang Cheng, Chi-An Chen",Cord blood stem cell-derived DCs generate potent antigen-specific immune responses and anti-tumor effects. Clin Sci, Jan 23, 2012. [Epub ahead of print].
12. Chih-Peng Lin, Yi-Chia Wang, Feng-Sheng Lin, Wei-Zen Sun*", Intravenous electrocardiography helps inexperienced operators to place totally implantable venous access device more accurately. J Surg Oncol, 2011 Dec 7. doi: 10.1002/jso.23000. [Epub ahead of print].
13. Ming-Cheng Chang, Shou-Zen Fan, Po-Ni Hsiao, Wen-Fang Cheng*, Wei-Zen Sun", Influence of morphine on host immunity. Acta Anaesthesiol Taiwan, 49(3):105-8, 2011.
14. Hsiang-Hsun Kung, Sheng-Feng Hsu, Yu-Chun Hung, Kuen-Bao Chen, Jui-Yuan Chen, Yeong-Ray Wen*, Wei-Zen Sun", Electroacupuncture analgesia, stress responses, and variations in sensitivity in rats anesthetized with different Sub-MAC anesthetics. Eur J Pain, 15(6):600-7, 2011.
15. Jia-Rong Yeh, Wei-Zen Sun, Yeong-Ray Wen, Jiann-Shing Shieh*",A novel continuous visual analog scale model derived from pain-relief demand index via Hilbert Huang Transform for postoperative pain, J Med Biol Eng, 31(3): 169-176, 2011.
16. Chih-Peng Lin, Yi-Chia Wang, Feng-Sheng Lin, Chi-Hsiang Huang, Wei-Zen Sun*",Ultrasound-assisted percutaneous catheterization of the axillary vein for totally implantable venous access device. Eur J Surg Oncol, 37(5):448-51, 2011.

17. Li-Kuei Chen, Ya-Min Yang, Yu-Hsuan Yang, Chien-Nan Lee, Shiou-Sheng Chen, Wei-Zen Sun*", Doppler measurement of the changes of fetal umbilical and middle cerebral artery velocimetric indices during continuous epidural labor analgesia. Reg Anesth Pain Med, 36(3):249-55, 2011.

18. Ding-Dar Lee, Chien-Kang Huang, Pei-Chiung Ko, Yun-Ting Chang, Yen-Jen Oyang*, Wei-Zen Sun*", Association of primary cutaneous amyloidosis with atopic dermatitis: a nationwide population-based study in Taiwan. Br J Dermatol, 164(1):148-153, 2011.

19. Tzu-Fu Lin, Feng-Sheng Lin, Wei-Han Chou, Yu-Chang Yeh, Chih-Peng Lin, Shou-Zen Fan, Wei-Zen Sun*", Compatibility and stability of binary mixtures of ketorolac tromethamine and tramadol hydrochloride injection concentrate and diluted infusion solution. Acta Anaesthesiol Taiwan, 48(3):117-21, 2010.

20. Chi-An Chen, Ho CM, Ming-Cheng Chang, Wei-Zen Sun, Ying-Cheng Chiang, Syu MH, Chang-Yao Hsieh, Wen-Fang Cheng*", Metronomic chemotherapy enhances antitumor effects of cancer vaccine by depleting regulatory T lymphocytes and inhibiting tumor angiogenesis. Mol Ther, 18(6):1233-43, 2010.

21. Jia-Rong Yeh, Wei-Zen Sun, Jiann-Shing Shieh, Norden E. Huang", Investigating fractal property and respiratory modulation of human heartbeat time series using empirical mode decomposition. Med Eng Phys, 32 (2010) 490–496, 2010.

22. Wei-Zen Sun, Ming-Cheng Chang, Po-Ni Hsiao, Chi-An Chen, Y-T. Hsu, Chang-Yao Hsieh, Wen-Fang Cheng*", Morphine-sparing effect by COX-1 inhibitor sustains analgesic function without compromising antigen-specific immunity and anti-tumor effect of naked DNA vaccine. Int J Immunopathol Pharmacol, 23(1):91-104, 2010.

23. Yeong-Ray Wen, Chia-Chuan Wang, Geng-Chang Yeh, Sheng-Feng Hsu, Yen-Li Li, Chen-Ru Li, Wei-Zen Sun", DNIC-mediated analgesia produced by a supramaximal electrical or a high dose formalin conditioning stimulus: roles of opioid and α-2 adrenergic receptors. J Biomed Sci, 17(1):19, 2010.

24. Jia-Rong Yeh, Wei-Zen Sun, Jiann-Shing Shieh, Norden E. Huang", Intrinsic mode analysis of human heartbeat time series. Ann Biomed Eng, 38(4):1337-44, 2010.

25. Chun-Yi Dai, Chien-Yu Chen, Yung-Kuan Chang, Wei-Teng Lin, Chih-Peng Lin, Wei-Zen Sun", Sunscope: A multifunctional endoscopic platform with detachable probe. J Clin Monit Comput, 24:6–7, 2010.

※研討會論文 Conference & proceeding papers

1. Wei-Zen Sun", The competitive role between interventional and conventional pain management in hospice care in Taiwan. (Plenary Lecture) The 46th Annual Meeting of the Japan Society of Pain Clinicians, Shimane, Japan, 2012.
2. 孫維仁"，以夷制夷的中西醫學互補整合方略：嚴謹西方觀點（大會演講）。臺北國際中醫藥學數論壇, Taipei Traditional Chinese Medicine International Forum, Taiwan, s53-4, 2012.
3. Feng-Sheng Lin, Wen-Ying Lin, Chih-Peng Lin, Wei-Zen Sun*", Novel implication of Near-infrared spectroscopy in treating complex regional pain syndrome: a useful monitor for sympathetic block. Chinese J Pain, 2(1S): s114-5, 2012.
4. Wen-Ying Lin, Feng-Sheng Lin, Chih-Peng Lin, Wei-Zen Sun*", Percutaneous spinal cord stimulation as a useful alternative to intractable cancer pain associated with profound opioid tolerance. Chinese J Pain, 2(1S): s112-3, 2012.
5. Wen-Ying Lin, Feng-Sheng Lin, Chih-Peng Lin, Wei-Zen Sun*",Percutaneous spinal cord stimulation relieves intractable cancer pain- a clinical case report. Chinese J Pain, 2(1S): s117-8, 2012.
6. Chih-Peng Lin, Wen-Ying Lin, Feng-Sheng Lin, Wei-Zen Sun*", PPAR gamma agonist Pioglitazone neither delays nor decrease morphine tolerance and morphine-induced glial activation. Chinese J Pain, 2(1S): s90-1, 2012.
7. Wei-Zen Sun*",Disposable piezoelectric pump module for PCA. (Plenary Lecture) Symposium of ITRI Subject-directed Industry Cooperation, Shinchu, Taiwan, s1-7, 2011.
8. Wei-Zen Sun*", Campaign for diabetic polyneuropathy pain (DPNP). (Plenary Lecture) 2nd Symposium of DPNP, Taipei, Taiwan, s1-9, 2011.
9. Wei-Zen Sun*", Development of medical and patient education program. (Plenary Lecture) Taiwan Fibromyalgia Advisory Board 2nd Meeting, Taipei, s10-12, 2011.
10. Wei-Zen Sun*"，優質生活論壇 (Forum on quality of life). Annual Meeting of 2011 Tsing Hua Entrepreneur Network, Taichung, 3, 2011.
11. 葉家榮、戴君益、許智堯、孫維仁*"，OHCA與AED的資料探勘應用於生理監測模組之開發 (Novel patient monitor device derived

from OHCA survival). 2011緊急救護研討會 (2011 EMS Conference in New Taipei City), 180-1, 2011。

12. Wei-Zen Sun*", Constructing the national policy of analgesic prescription strategy in Taiwan

- evidence-based approach through National Health Insurance Research Database. (Plenary Lecture) Annual Meeting of 2011 Chinese Society of Anesthesiology, Fujian, 17, 2011.

13. Chun-Yi Dai, Wei-Zen Sun*", Cloud computing in patient-controlled analgesia. (Plenary Lecture) Acta Anaesthesiol Taiwan, 49(3S): 2011.

14. Jr-Chi Yeh, Wen-Ying Lin, Chih-Peng Lin, Feng-Sheng Lin, Shou-Zen Fan, Wei-Zen Sun*",Cough related Port-A-Cath migration and thrombosis. Acta Anaesthesiol Taiwan, 49(3S):80, 2011.

15. I-Hua Lin, Wen-Ying Lin, Feng-Sheng Lin, Shou-Zen Fan, Wei-Zen Sun*",Postdural puncture headache after ultrasound-guided cervical transforaminal injection. Acta Anaesthesiol Taiwan, 49(3S):94, 2011.

16. Yi-Chia Wang, Wei-Han Chou, Feng-Sheng Lin, Shou-Zen Fan, Wei-Zen Sun*", Ultrasound-guided low internal jugular vein catherization as a rescue procedure for totally implantable venous access device. Acta Anaesthesiol Taiwan, 49(3S):143, 2011.

17. Ming-Che Hsu, Li-Kuei Chen, Shou-Zen Fan, Wei-Zen Sun*",Risk factors for developing pain in norsospermia varicocele patients. Acta Anaesthesiol Taiwan, 49(3S):159, 2011.

18. Man-Ling Wang, Chun-Yi Dai, Chih-Peng Lin, Feng-Sheng Lin, Wei-Zen Sun*", On-site airway management by EMT/paramedics improves the neurological outcome of OHCA—A time series population-based study. Acta Anaesthesiol Taiwan, 49(3S):162, 2011.

19. Chen-Yuan Hsieh, Yuan-Lan Huang, Yua-Chang, Li-Kuei Chen, Shou-Zen Fan, Wei-Zen Sun*", Satisfaction and side effects analysis and postoperative PCA. Acta Anaesthesiol Taiwan, 49(3S):179, 2011.

20. Wei-Zen Sun*", Strategy of analgesic prescription in Taiwan- a retrospective cohort study through National Health Insurance Research Database. (Plenary Lecture) 2011 Symposium of Development on the National Health Insurance Research Database, Hsinchu, Taiwan, s53-76, 2011.

21. Wei-Zen Sun*", Diagnosis and treatment of fibromyalgia. (Plenary Lecture) 2011 Southern Taiwan Neurology Conference, Kaoshiung, s15-26, 2011.

22. Wei-Zen Sun*", Building up fibromyalgia network and consensus in Taiwan medical professional. (Plenary Lecture) Taiwan Fibromyalgia Advisory Board 1st Meeting, Taipei, s10-12, 2011.

23. Wei-Zen Sun*", Disposable and detachable endoscope. (Plenary Lecture) 2011 Taiwan Biomedical Electronics and Bioinformatics Forum, Taipei, s245-86, 2011.

24. Wei-Zen Sun*",Neurobiological aspects of pain. (Plenary Lecture) 4th Psychosomatic Forum, Taipei, 2011.

25. Wei-Zen Sun*", Who is visiting the pain clinic? (Plenary Lecture), Annual Congress of Taiwanese Association for the Study of Pain, Changhua, Taiwan, Chinese J Pain, 2(1S): s-, 2011.

26. Yi-Chia Wang, Chih-Peng Lin, Feng-Sheng Lin, Shou-Zen Fan, Wei-Zen Sun*", Pain patients database from National Taiwan University Hospital, one-year cohort study. Chinese J Pain, 2(1S): s-, 2011.

27. Chih-Peng Lin, Wen-Ying Lin, Yi-Chia Wang, Wei-Han Chou, Feng-Sheng Lin, Shou-Zen Fan, Wei-Zen Sun*",Complemental Radiofrequency ablation to conventional splanchnic neurolysis for refractory upper abdominal pain. Chinese J Pain, 2(1S): s-, 2011.

28. Wei-Zen Sun*", The bell rang by itself: pain of unknown origin (Panel Discussion) 3rd Asian Pacific Medical Student Symposium, Taipei, Taiwan, 2011.

29. Wei-Zen Sun*",Current trend of diabetic polyneuropathy pain (DPNP). (Plenary Lecture) 1st Symposium of DPNP, Taipei, Taiwan, s1-9, 2011.

30. Chun-Yi Dai, Wei-Zen Sun*", Disposable PCA driven by micropump (Plenary Lecture), 2010 NTU Medical Electronics Forum, Taipei, Taiwan, s6, 2010.

31. Wei-Zen Sun*", Paradigm shift from clinician to entrepreneur- physicians in the crossroad of National Health Insurance reform. (Plenary Lecture) 2010 Congress of Formosan Medical Association, Taipei, Taiwan, 2010.

32. Wei-Zen Sun*", Surfing PCA on Cloud: Networking patient with station through Internet-of-Thing. (Plenary Lecture) 14th World Pain Clinic Congress, Beijing, China, 2010.

33. Wei-Zen Sun*", Evolving role of complimentary medicine in contemporary pain management: an evidence-based perspective. (Plenary Lecture) 1st NTUH Sym posium of Complementary and Integrated Medicine Taipei, Taiwan, 2010.

34. Chien-Kuang Wu, Wen-Ying Lin, Jiann-Shing Shieh, M.F. Abbod, Yeong-Ray Wen, Wei-Zen Sun*",Particle swarm optimization ensembled neural networks in postoperative pain evaluation via patient-controlled analgesia. Acta Anaesthesiol Taiwan, 48(3S):s173-4, 2010.

35. Ming-Cheng Chang, Wen-Fang Cheng, Po-Ni Hsiao, Wei-Zen Sun*",The influences of morphine on dendritic cells-mediated immunity. Acta Anaesthesiol Taiwan, 48(3S):s, 2010.

36. Yi-Chia Wang, Chih-Peng Lin, Cheng-Hong Lin, Chi-Hsiang Huang, Feng-Sheng Lin, Shou-Zen Fan, Wei-Zen Sun*",Intravenous electrocardiography for accurate totally implantable venous access device placement for inexperienced operators. Acta Anaesthesiol Taiwan, 48(3S):s180-1, 2010.

37. Yen-Chun Hsu, Yu-Chang Yeh, Shou-Zen Fan, Wing-Sum Chan, Wei-Zen Sun*",Oxidative stress and microcirculation in patient with hepatic failure undergoing liver support treatment. Acta Anaesthesiol Taiwan, 48(3S):s183, 2010.

38. Kuan-Wu Chang, Man-Ling Wang, Chun-Yi Dai, Yi-An Chen, Wei-Zen Sun*",Discrepant survival after laryngeal mask and endotracheal intubation: a retrospective analysis among 420 out-of-hospital cardiac arrest patients in Taipei County EMS. Acta Anaesthesiol Taiwan, 48(3S):s185-6, 2010.

39. Wei-Han Chou, Chih-Peng Lin, Feng-Sheng Lin, Chuen-Shin Jeng, Wei-Zen Sun*", Selective superior trunk of brachial plexus superficial cervical plexus block for shoulder region post-operative analgesia. Acta Anaesthesiol Taiwan, 48(3S):s188, 2010.

40. Jr-Chi Yeh, Chih-Peng Lin, Feng-Sheng Lin, Chuen-Shin Jeng, Wei-Zen Sun*",Ultrasound guided fascia iliaca compartment block for post-operative analgesia. Acta Anaesthesiol Taiwan, 48(3S):s191, 2010.

41. Yow-Shan Lee, Po-Yuan Shih, Chih-Cheng Chien, Shou-Zen Fan, Wei-Zen Sun*",Analgesic-induced anaphylaxis: A retrospective cohort study in Taiwan. Acta Anaesthesiol Taiwan, 48(3S):s192-3, 2010.

42. Feng-Sheng Lin, Chih-Peng Lin, Shy-Hong Chen, Wei-Zen Sun*",Ultrasound as a monitor of lumbar epidural spread in caudal steroid injection. Acta Anaesthesiol Taiwan, 48(3S):s276-7, 2010.

43. Jiann-Shing Shieh, Chien-Kuang Wu, Maysam F. Abbod, Yeong-Ray Wen, Wei-Zen Sun*", Visual analog scale of pain intensity prediction based on ensembled artificial neural networks via i-Pain System. 10th Industrial Data Mining, Berlin, Germany, 2010.

44. 孫維仁”,無意識的人生，心靈與現實之間 (Plenary Lecture)。腦與心智科學的生活講座-智慧巡禮演講系列, 2010-05-29, Taipei.

45. Wei-Zen Sun*”, Constructing an evidence-based analgesic policy by National Health Insurance Research Database. (Plenary Lecture) Annual Meeting of 2010 Taiwanese Society for the Study of Pain, Taipei, Taiwan. Chinese J Pain, 20(1S): s1-2, 2010.

46. Wen-Ying Lin, Chih-Peng Lin, Feng-Sheng Lin, Li-Kuei Chen, Shou-Zen Fan, Wei-Zen Sun*”,Intrathecal drug delivery system for intractable cancer pain patient: efficacy and technical consideration. Chinese J Pain, 20(1S): s18-9, 2010.

47. Yeong-Ray Wen, Wei-Zen Sun, Hsiang-Hsun Kung, Yi-Ru Chen, Yen-Li Li”, Electroacupuncture decreased postoperative tactile allodynia and spinal neuronal activation in rats following plantar incision. Chinese J Pain, 20(1S): s24-5, 2010.

48. Yi-Chia Wang, Chih-Peng Lin, Feng-Sheng Lin, Li-Kuei Chen, Shou-Zen Fan, Wei-Zen Sun*”,Surveillance of cancer pain consultation-preliminary report of 136 patients from National Taiwan University Hospital Cancer Pain Databank. Chinese J Pain, 20(1S): s56-7, 2010.

49. Chien-Kuang Wu, Jiann-Shing Shieh, M.F. Abbod, Yeong-Ray Wen, Wei-Zen Sun*”, Differential analgesic effects of various PCA formulations: neural network model simulation under i-Pain platform. Chinese J Pain, 20(1S): s60-1, 2010.

50. Yi-Shiuan Lin, Li-Kuei Chen, Wei-Zen Sun, Chih-Peng Lin, Feng-Sheng Lin, Shou-Zen Fan”,Epidural blood patch in a patient with spontaneous intracranial hypotension. Chinese J Pain, 20(1S): s78-80, 2010.

※專書 Books

1. 孫維仁”，癌症及其末期疾病所致之疼痛。IN: 黃安年:末期疾病疼痛治療學(Pain Management for Terminal Diseases, ISBN

9789861506197)，臺灣安寧緩和醫學學會, 2nd ed, pp1-23, 2012.

2. 孫維仁、葉芷圻合著”,從景福門遊台北城 (The journey from Jin Fu Gate to Taipei), (ISBN 978-986-02-9265-7)。臺灣大學醫學院麻醉科出版，1st ed, pp1-44, 2011.
3. 高瑞鴻、張冠吾、戴君益、馬惠明、賴飛羆、孫維仁*”,緊急醫療病徵準則之分析設計 (The analysis and design for the guidance of emergency medical dispatcher). 2011緊急救護研討會 (2011 EMS Conference in New Taipei City), 156-65, 2011。
4. 賴毓敏、馬惠明、孫維仁、歐陽彥正”, 新北市到院前心肺功能停止患者之生物統計分析 (Bio-statistical analysis of the New Taipei City out-of-hospital cardiac arrest database). 2011緊急救護研討會 (2011 EMS Conference in New Taipei City), 148-55, 2011。
5. 江元彰、謝建興、馬惠明、孫維仁*、張冠吾”, 到院前心肺功能停止患者之大規模資料分析 (The large-scale data-mining on the patient with out-of-hospital cardiac arrest). 2011緊急救護研討會 (2011 EMS Conference in New Taipei City), 142-7, 2011。
6. 陳棯惠、王志鵬、陳建瑋、俞又文、戴君益、孫維仁*”, 全國救護專責化之成效分析 (National impact of designated emergency medical service team in Taiwan) 。 2011緊急救護研討會 (2011 EMS Conference in New Taipei City), 16-37, 2011。
7. 孫維仁、余峻瑜*”,以流程分析進行緊急救護管理(Emergency medical service system management: a process-oriented perspective)。2011緊急救護研討會 (2011 EMS Conference in New Taipei City), 108-113, 2011。
8. Yu-Chang Yeh, Tzu-Fu Lin, Wei-Zen Sun*”,Reply to letter entitled “,The mechanisms of ultra-low dose opioid agonist-antagonist”,. J Formos Med Assoc, 110(10):667, 2011.
9. 黃秀美、孫維仁*”, 帶狀皰疹結痂後還會痛？好發中老年人，痛、疲、疹是三大警訊。商業周刊，1237: 88-90, 2011。
10. 高瑞鴻、張冠吾、戴君益、馬惠明、賴飛羆、孫維仁*”, 遠距醫療於緊急醫療之運用。 臺灣醫學，15(2):151-6, 2011。
11. 孫維仁及全方位疼痛處置諮詢委員會(TOPMAN)合著”,臺灣全方位疼痛處置指引, (ISBN 978-988-17910-5-4)。台灣疼痛醫學會出版，2nd ed, pp1-83, 2010.
12. 孫維仁、羅榮昇、王署君合著”,神經病變痛病患手冊。臺灣疼痛醫學會出版，1st ed, pp1-20, 2010.
13. 劉志中、郭書麟、汪志雄、孫維仁、簡志誠*”,Pethidine臨床使用議題 。臺灣醫學，14(6): 652-7, 2010。
14. 孫維仁*”,管制藥品面面觀 。臺灣醫學，14(6): 625-6, 2010。
15. 王憶嘉、孫維仁*”,急性疼痛的大架構和新思維—Ketorolac 在自控式止痛處理的角色 。永信藥訊，340(1): 7-11, 2010。

田維誠助理教授 Wei-Cheng Tian, Assistant Professor

※學術期刊論文 Journal articles & book chapters

1. Yu-Hsuan Ho, Ding-Wei Huang, Yung-Ting Chang, Ya-Han Ye, Chih-Wei Chu, Wei-Cheng Tian, Chin-Ti Chen, and Pei-Kuen Wei, “Improve efficiency of white organic light-emitting diodes by using nanosphere arrays in color conversion layers”, Opt. Express, 20, pp. 3005-3014, Jan. 2012
2. Wei-Cheng Tian *, T.H. Wu, C.J. Lu W. R. Chen and H.J. Sheen, “Development of a Novel Micropreconcentrator for Micro Gas Chromatography”, J. Micromech. Microeng., under press, 2012

※研討會論文 Conference & proceeding papers

1. Y. -L. Liu, K. -P. Liao, K. -B. Sung, and Wei-Cheng Tian *, “Design of nanofluidic preconcentrators using electrical resistive circuit network”,International SEMBA & BioPro, Taichung, Taiwan, Feb. 2012
2. Yu-Hsuan Ho, Kuan-Han Ting, Yung-Ting Chang, Wei-Cheng Tian, Chih-Wei Chu, Chin-Ti Chen and Pei-Kuen Wei, “Improve

Efficiency of White Organic Light-Emitting Diodes by Using Nanosphere Arrays in Color Conversion Layers", SID2012, Boston, MA, USA, Jun. 2012

3. Yu-Hsuan Ho, Shun-Wei Liu, Hsun Liang, Kuan-Han Ting, Wei-Cheng Tian and Pei-Kuen Wei, "Luminous and Conversion Efficiency Improvement in OLED/OPV Tandem Device with Omnidirectional Antireflection Nanopillars", SID2012, Boston, MA, USA, Jun. 2012
4. C. -H. Chou, C. -H. Chen, and Wei-Cheng Tian *, T. -H. Chan, and C. -J. Lu, "A Highly Sensitive Nanomachined TiO2 Gas Sensor for Micro Gas Chromatography", AVS 58th International Symposium & Exhibition, Nashville, YN, USA, Nov. 2011
5. C. -J. Hsieh, J. -C. Liou, C. -T. Sun, Y. -C. Lin, and Wei-Cheng Tian *, "Novel CMOS MEMS Double Parallel Plate Capacitive Tactile Sensors For Blood Flow Monitoring", AVS 58th International Symposium & Exhibition, Nashville, YN, USA, Nov. 2011
6. K. P. Liao, K.B. Sung, and Wei-Cheng Tian *, "PRECISE SAMPLE POSITIONING FOR MULTIPOINT IMMUNOASSAY USING NANOFLUIDIC PRECONCENTRATOR", Transducers 2011, pp. 2239-2243, Beijing, China, Jun. 2011
7. Wei-Cheng Tian *, C. -Y. Kuo, C. -J. Hsieh, H.-L. Lu, and C. -J. Lu, "A Carbon Nanotube Gas Sensor Using CMOS-based Platform", IEEE Sensors 2011, pp. 1036-1040, Limerick, Ireland, Oct. 2011
8. Wei-Cheng Tian *, H.-J. Sheen, T. -H. Wu, C. -J. Lu, W. -R. Chen and T.-Y. Wei, "Development of a Novel Micropreconcentrator for Micro Gas Chromatograph", Transducers 2011, pp. 2094-2098, Bejing, China, Jun. 2011
9. Wei-Cheng Tian, "Novel Sensor Design in Discovery and Analysis of Biosignatures and Chemosignatures", The 2nd Taiwan Biosignatures Workshop, Taipei, Taiwan, Mar. 2011
10. Yu-Hsuan Ho, Chung-Chun Liu, Yung-Ting Chang, Hsun Liang, Wei-Cheng Tian, and Pei-Kuen Wei, "Efficiency and Contrast Enhancement in Organic Light Emitting Device with Omnidirectional Antireflection Nanopillars", IDW2011, Nagoya, Japan, Dec. 2011
11. Chao-Hao Chen, Chang-Jung Hsieh, Hsu-Kuei Lin, Ta-Shun Lee, Pei-Hung Chen, Chao-Hung Chou, Chia-Jung Lu, and Wei-Cheng Tian*, "Novel NEMS Gas Detectors for Micro Gas Chromatograph", AVS 57th International Symposium & Exhibition, Albuquerque, NM, USA, Oct. 2010
12. Wei-Cheng Tian, "Micro/Nano Analytical Systems to Identify Bio Markers for Human Breath Analysis", Nanotechnology for Medical Devices & Sensing Systems, Taipei, Taiwan, Mar. 2010

王水深教授 Shoei-Shen Wang, Professor

※學術期刊論文 Journal articles & book chapters

1. Chi NH, Yang MC, Chung TW, Chen JY, Chou NK, Wang SS(correspondence author), "Cardiac repair achieved by bone marrow mesenchymal stem cells/silk fibroin/hyaluronic acid patches in a rat of myocardial infarction mode",, Biomaterials, 33(22):5541-51, 2012.
2. Shih FJ, Fan YW, Chiu CM, Shih FJi, Wang SS(correspondence author), "The dilemma of 'to be or not to be': developing electronically e-health & cloud computing documents for overseas transplant patients from Taiwan organ transplant health professionals' perspective",, Transplant Proc, 44:835-8, 2012.
3. Chou NK, Luo JM, Chi NH, Wu IH, Huang SC, Chen YS, Yu HY, Tsao CI, Ko WJ, Chu SH, Wang SS(correspondence author), "Extracorporeal membrane oxygenation and thoratec pneumatic ventricular assist devices as double bridge to heart transplantation",, Transplant Proc, 44:878-80, 2012.
4. Tsao CI, Chou NK, Chi NH, Chen SC, Ko WJ, Yu HY, Chen YS, Wang SS(correspondence author), "The influence of the organ allocation policy on a patient's chances of undergoing heart transplantation and the posttransplantation survival rate",, Transplant Proc, 44:881-2, 2012.
5. Hsu KH, Huang SC, Chou NH, Chi NH, Tsao CI, Ko WJ, Chen YS, Chang CI, Chiu IS, Wang SS(correspondence author), "Ventricular assist device application as a bridge to pediatric heart transplantation: A single center's experience",, Transplant Proc, 44:883-5, 2012.
6. Lin MH, Chou NK, Chi NH, Chen YS, Yu HY, Huang SC, Ko WJ, Chou HW, Wang SS(correspondence author), "The outcome of heart transplantation in hepatitis C-positive recipients",, Transplant Proc, 44:890-3, 2012.
7. Chou NK, Jan CF, Chi NH, Lee CM, Wu IH, Huang SC, Chen YS, Yu HY, Tsao CI, Ko WJ, Chu SH, Wang SS(correspondence author), "Cardiac allograft vasculopathy compared by intravascular ultrasound sonography: everolimus to mycophenolate mofetil—One single-center experience",, Transplant Proc, 44:897-9, 2012.

8. Chou HW, Chi NH, Lin MH, Chou NK, Tsao CI, Yu HY, Chen YS, Wang SS(correspondence author), "Steroid pulse therapy combined with plasmapheresis for clinically compromised patients after heart transplantation",, Transplant Proc, 44:900-2, 2012.

9. Chang TI, Chi NH, Chou NK, Tsao CI, Yu HY, Chen YS, Wang SS(correspondence author), "Isolated cardiac sarcoidosis in heart transplantation",, Transplant Proc, 44:903-6, 2012.

10. Wang SS, Chou NK, Chi NH0, Huang SC, Wu IH, Wang CH, Yu HY, Chen YS, Tsao CI, Ko WJ, Shun CT, "Clinical experience of tacrolimus with everolimus in heart transplantation",, Transplant Proc, 44:907-9, 2012.

11. Chen YC, Chuang MK, Chou NK, Chi NH, Wu IH, Chen YS, Yu HY, Huang SC, Wang CH, Tsao CI, Ko WJ, Wang SS(correspondence author), "Twenty-four year single-center experience of hepatitis B virus infection in heart transplantation",, Transplant Proc, 44:910-2, 2012.

12. Luo JM, Chou NK, Chen YS, Huang SC, Chi NH, Yu HY, Ko WJ, Wang SS(correspondence author), "Heart retransplantation for pediatric primary allograft failure",, Transplant Proc, 44:913-4, 2012.

13. Tseng PH, Wang SS(correspondence author), Shih FJ, "Changes in health-related quality of life across three post–heart transplantation stages: Preoperative extracorporeal membrane versus non–extracorporeal membrane group/clinical trial plan group versus non–clinical trial plan group in Taiwan",, Transplant Proc, 44:915-8, 2012.

14. Huang SC, Wu ET, Wang CC, Chen YS, Chang CI, Chiu IS, Ko WJ, Wang SS(correspondence author), "Eleven years of experience with extracorporeal cardiopulmonary resuscitation for paediatric patients with in-hospital cardiac arrest",, Resuscitation, 83:710-14, 2012.

15. Wu IH, Wu MH, Chen SJ, Wang SS, Chang CI, "Successful deployment of an iliac limb graft to repair acute aortic rupture after balloon aortoplasty of recoarctation in a child with Turner syndrome aortoplasty of recoarctation in a child with Turner syndrome",, Heart Vessels, 27:227-30, 2012.

16. Chiu HH, Wu MH, Wang SS, Lan C, Chou NK, Chen SY, Lai JS, "Cardiorespiratory function of pediatric heart transplant recipients in the early postoperative period",, Am J Phys Med Rehab, 91(2):156-61, 2012.

17. Chi NH, Chou NK, Tsao CI, Huang SC, Wu IE, Yu HY, Chen YS, Wang SS(correspondence author), "Endomyocardial biopsy in heart transplantation: schedule or event ?",, Transplant Proc, 44:894-6, 2012.

18. Chung TW, Yang MC, Tseng CC, Sheu SH, Wang SS(correspondence author), Huang YY, Chen SD, "Promoting regeneration of peripheral nerves in-vivo using new PCL-NGF/Tirofiban nerve conduits",, Biomaterials, 32:734-43, 2011.

19. Hsu CJ, Chen SY, Su S, Yang MC, Lan C, Chou NK, Hsu RB, Lai JS, Wang SS(correspondence author), "The effect of early cardiac rehabilitation on health-related quality of life among heart transplant recipients and patients with coronary artery bypass graft surgery",, Transplant Proc, 43:2714–7, 2011.

20. Zuckermann A, Arizon JM, Dong G, Eisen HJ, Kobashigawa J, Lehmkuhl H, Ross H, Pelligrini C, Wang SS, Barten MJ, "Impact of de novo everolimus-based immunosuppression on incisional complications in heart transplantation",, Transplantation, 92(5):594-600, 2011.

21. Huang CL, Wu YW, Wang SS, Tseng CD, Chiang FT, Hsu KL, Lee CM, Tzen KY, "Continuous intravenous infusion of prostaglandin E1 improves myocardial perfusion reserve in patients with ischemic heart disease assessed by positron emission tomography: a pilot study",, Ann Nucl Med., 25:462-8, 2011.

22. Huang TM, Wu VC, Young GH, Lin YF, Shiao CC, Wu PC, Li WY, Yu HY, Hu FC, Lin JW, Chen YS, Lin YH, Wang SS, Hsu RB, Chang FC, Chou NK, Chu TS, Yeh YC, Tsai PR, Huang JW, Lin SL, Chen YM, Ko WJ, Wu KD, "Preoperative proteinuria predicts adverse renal outcomes after coronary artery bypass grafting",, J Am Soc Nephrol, 22(1):156-63, 2011.

23. Hsu KH, Chi NH, Yu HY, Wang CH, Huang SC, Wang SS, Ko WJ, Chen YS, "Extracorporeal membranous oxygenation support for acute fulminant myocarditis: analysis of a single center's experience",, Eur J Cardio-thorac, 40:682-8, 2011.

24. Hsu RB, Chang CI, Fang CT, Chang SC, Wang SS, Chu SH, "Bloodstream infection in heart transplant recipients: 12-year experience at a university hospital in Taiwan",, Eur J Cardio-thorac, 41:1362-7, 2011.

25. Lin MH, Yu HY, Wang SS, "Haematogenous metastases after complete resection of primary cardiac sarcoma from the left atrium",, Acta Cardiol., 66 (3):395-7, 2011.

26. Yang MC, Chi NH, Chou NK, Huang YY, Chung TW, Chang YL, Liu HC, Shieh MJ, Wang SS(correspondence author), "The influence of rat mesenchymal stem cell CD44 surface markers on cell growth, fibronectin expression, and cardiomyogenic differentiation on silk fibroin - hyaluronic acid cardiac patches",, Biomaterials, 31:854-62, 2010.

27. Wang SS, Chou NK, Chi NH, Huang SC, Wu IH, Wang CH, Yu HY, Chen YS, Tsao CI, Ko WJ, Shun CT, "Can cyclosporine blood level be reduced to half after heart transplantation?",, Transplant Proc, 42(3):930-3, 2010.

28. Wang SS, Chou NK, Chi NH, Huang SC, Wu IH, Wang CH, Yu HY, Chen YS, Tsao CI, Ko WJ, Shun CT, "The survival of heart transplant recipients using cyclosporine and everolimus is not inferior to that using cyclosporine and mycophenolate",, Transplant Proc, 42(3):938-9, 2010.

29. Luo JM, Chou NK, Chi NH, Chen YS, Yu HY, Wang CH, Ko WJ, Tsao CI, Sun CD, Wang SS(correspondence author), "Pediatric heart transplantation bridged with ventricular assist devices",, Transplant Proc, 42(3):913-5, 2010.

30. Lin MH, Chou NK, Chen YS, Chi NH, Ko WJ, Yu HY, Huang SC, Wu NT, Wang JK, Wu MH, Wang SS(correspondence author), "Outcome in children bridged and nonbridged to cardiac transplantation",, Transplant Proc, 42(3):916-9, 2010.

31. Chou NK, Chi NH, Wu IW, Huang SC, Chen YS, Yu HY, Tsao CI, Ko WJ, Chu SH, Wang SS(correspondence author), "Extracoporeal membrane oxygenation hybrid with thoratec ventricular-assist devices as double bridge to heart transplantation",, Transplant Proc, 42(3):920-2, 2010.

32. Luo JM, Chou NK, Chi NH, Chen YS, Yu HY, Wang CH, Ko WJ, Tsao CI, Sun CD, Wang SS(correspondence author), "Heart transplantation in patients with amyloidosis",, Transplant Proc, 42(3):927-9, 2010.

33. Hsu KH, Chou NK, Tsai MK, Chi NH, Chen TS, Yu HY, Wang CH, Ko WJ, Tsao CI, Lee PH, Wang SS(correspondence author), "Combined sirolimus–calcineurin inhibitor immunosuppressive therapy in simultaneous heart and kidney transplantation: a retrospective analysis of a single hospital's experience",, Transplant Proc, 42(3):934-7, 2010.

34. Lin CS, Wang SS(correspondence author), Chang CL, Shih FJ, "Dark-recovery experiences, coping strategies, and needs of adult heart transplant recipients in Taiwan",, Transplant Proc, 42(3):940-2, 2010.

35. Chou NK, Chi NH, Wu IW, Huang SC, Chen YS, Yu HY, Tsao CI, Ko WJ, Chu SH, Wang SS(correspondence author), "Extracoporeal membrane oxygenation to rescue cardiopulmonary failure after heart transplantation: a single-center experience",, Transplant Proc, 42(3):943-5, 2010.

36. Tsao CI, Chou NK, Chi NH, Yu HY, Chen YS, Wang CH, Ko WJ, Chen SC, Wang SS(correspondence author), "Unplanned readmission within 1 year after heart transplantation in Taiwan",, Transplant Proc, 42(3):946-7, 2010.

37. Chen YC, Chou NK, Hsu RB, Chi NH, Wu IH, Chen YS, Yu HY, Huang SC, Wang CH, Tsao CI, Ko WJ, Wang SS(correspondence author), "End-stage renal disease after orthotopic heart transplantation: a single-institute experience",, Transplant Proc, 42(3):948-51, 2010.

38. Chou NK, Chi NH, Wu IW, Huang SC, Chen YS, Yu HY, Tsao CI, Ko WJ, Sun HY, Chang SC, Chu SH, Wang SS(correspondence author), "Fungal Infection in Heart Transplant Recipients With Severe Sepsis: Single-Center Experience",, Transplant Proc, 42(3):952-54, 2010.

39. Tseng PH, Wang SS(correspondence author), Chang CL, Shih FJ, "Job Resumption Status, Hindering Factors, and Interpersonal Relationship Within Post–Heart Transplant 1 to 4 Years as Perceived by Heart Transplant Recipients in Taiwan: A Between-Method Triangulation Study",, Transplant Proc, 42(10):4247-50, 2010.

40. Tseng PH, Wang SS, Chang CL, Shih FJ, "Perceived health-related quality of life in heart transplant recipients with vs without preoperative ECMO in Taiwan: between-method triangulation study",, Transplant Proc, 42(3):923-6, 2010.

41. Shih FJ, Fan YW, Chen HM, Chiu CM, Wang SS, "Challenging issues of overseas transplantation in mainland China: Taiwan organ transplant health professionals' perspective",, Transplant Proc, 42(10):3917-20, 2010.

42. Wu IH, Chen YC, Wang SS, Lin MT, "Gasless laparoscopic aorto-bifemoral bypass grafting using self-designed abdominal lifting system",, J Laparoendosc Adv S, 20(8):721-4, 2010 Oct.

43. Hsu RB, Chang CI, Tsai MK, Lee PH, Chou NK, Chi NH, Wang SS, Chu SH, "Effect of simultaneous kidney transplantation on heart-transplantation outcome in recipients with preoperative renal dysfunction",, Eur J Cardio-thorac, 37:68-73, 2010.

44. Chiu HH, Wang SS, Wu MH, Wang JK, "Aortitis with severe aortic regurgitation in Behcet's disease : a case report",, J Formos Med Assoc, 109(1):82-4, 2010.

45. Lin YH, Liao KH, Huang CK, Chou NK, Wang SS, Chu SH, Hsieh KH, "Superhydrophobic film of UV-curable fluorinated epoxy acrylate

resins",, Polym Int, 59:1205-11, 2010.

46. Chan CY, Wang SS, "Invited Commentary : Distribution of hypoxia-inducible factor-1α and Bc1-2 – A study of varicose veins by confocal microscopy",, Formos J Surg, 43:229-35, 2010.

47. LinYH, Lin C, Lo MT, Lin HJ, Wu YW, Hsu RB, Chao CL, Hsu HC, Wang PC, Wu VC, Wang SS, Lee CM, Chine KL, Ho YL, Chen MF, Peng CKl, "The relationship between aminoterminal propeptide of type III procollagen and heart rate variability parameters in heart failure patients: a potential serum marker to evaluate cardiac autonomic control and sudden cardiac death",, Clin Chem Lab Med., 48(12):1821-7, 2010 Dec.

48. Wu YW, Chen YH, Wang SS, Jui HY, Yen RF, Tzen KY, Chen MF, Lee CM, "PET assessment of myocardial perfusion reserve inversely correlates with intravascular ultrasound findings in angiographically normal cardiac transplant recipients",, J Nucl Med., 51(6):906-12, 2010 Jun.

49. Wang CC, Lu CW, Chen CA, Wu ET, Wu MH, Wang SS, Huang SC, "One-stage repair of ventricular septal defect and severe tracheomalacia by aortopexy and posterior tracheal wall stabilization",, Ann Thorac Surg., 89(5):1677-8, 2010 May.

50. Lin JW, Wang MJ, Yu HY, Wang CH, Chang WT, Jerng JS, Huang SC, Chou NK, Chi NH, Ko WJ, Wang YC, Wang SS, Hwang JJ, Lin FY, Chen YSl, "Comparing the survival between extracorporeal rescue and conventional resuscitation in adult in-hospital cardiac arrests: propensity analysis of three-year data",, Resuscitation, 81(7):796-803, 2010.

51. Chung JC, Tsai PR, Chou NK, Chi NH, Wang SS, Ko WJ., "Extracorporeal membrane oxygenation bridge to adult heart transplantation",, Clin Transplant, 24(3):375-80, 2010.

52. Hsu RB, Chang CI, Tsai MK, Lee PH, Chou NK, Chi NH, Wang SS, Chu SH, "Low incidence of malignancy in heart-transplant recipients in Taiwan: an update and comparison with kidney-transplant recipients",, Eur J Cardio-thorac, 37(5):1117-1121, 2010.

53. Huang HC, Kao HL, Wu XM, Wang SS, Hsu RB, Ho YL, Chen MF, "Long-term prognosis in ethnic Chinese patients with unprotected left main coronary artery disease",, Clin Res Cardiol, 99:437-43, 2010.

※研討會論文 Conference & proceeding papers

1. Wang SS, "Surgical Treatment of Aortic Arch Lesions",, The 6th China Southern Endovascular Congress (CSEC 2012), Guangzhou, China , June 14-17, 2012

2. Wang SS, "Hybrid Procedures for Thoracic Aortic Diseases",, Catholic VESSEL Update 2011", (Vascular & Endovascular Surgery Symposium for Education & Learning), Seoul, Korea, December 9, 2011

3. Wang SS, "Nanotechnology in Tissue Engineering of Vascular Grafts and Thrombolysis – Applying Nano-roughness in Biomaterials and Nanoparticles in Drug Delivery.",, 12th Annual Congress of Asian Society for Vascular Surgery and 6th Asian Venous Forum, Taipei, Taiwan , September 29- October 2 2011

4. Wang SS , "Venous Thromboembolism.",, 12th Annual Congress of Asian Society for Vascular Surgery and 6th Asian Venous Forum, Taipei, Taiwan , September 29- October 2 2011

5. Wang SS , "Successful Heart Transplantation Across a Positive Crossmatch",, Cross Strait Organ Transplant Symposium, Inner Mongolia, China , August 6, 2011

6. Wang SS, "Management of Stanford A Dissection in Taiwan.",, The 5th South Vascular Forum, Guangzhou, China , July 22-24, 2011

7. Wang SS , "Clinical Application of Certican in Heart Transplantation.",, Certican Heart Advisory Meeting , Zurich, Switzerland ,May 26-29, 2011

8. Wang SS , "Ongoing Challenges in Heart Transplantation : The Impact of Cardiac Allograft Vasculopathy",, International Society for Heart & Lung Transplantation(ISHLT) 31st Annual Meeting and Scientific Sessions., San Diego, USA, April 15, 2011

9. Wang SS , "Hybrid Stent-Grafting for Thoracic and Thoracoabdominal Aortic Aneurysm.",, Catholic VESSEL Update 2010", (Vascular & Endovascular Surgery Symposium for Education & Learning), Seoul, Korea,December 4, 2010

10. Wang SS ",Immunosuppressive Therapy after Heart Transplantation",, The 8th Asia Transplantation Immunology Forum

(ATIF), Suzhou, China ,September 25, 2010

11. Wang SS ",Training curriculum to be vascular surgeon including endovascular procedure",, The 11th Annual Congress of Asian Society for Vascular Surgery. (ASVS) , June 29-July 2, 2010, Kyoto, Japan

12. Wang SS ",How Much Cyclosporine Can Be Reduced in Everolimus Regimen ?",, 2010 Cross-Straits Forum on Organ Transplantation, Qing Dao, China, April 17, 2010

12. Wang SS ",Subclavian bypass in high risk patients to prevent paraplegia in thoracic endovascular aneurysm repair (TEVAR)",, The 12th South China International Congress of Cardiology [SC-ICC 2010], Guangzhou, China, April 8-11, 2010

※專書 Books

1. 王水深、詹志洋、吳毅暉、周迺寬、陳益祥, "靜脈疾病及血管通路",, 2011.10.
2. 王水深、陳益祥、詹志洋, "血管腔內治療實用手冊",, 2010.07.
3. 王水深、周迺寬、曹傳怡, "新心相繫長長久久",, 2010.06.
4. 王水深、詹志洋、周迺寬, "血管疾病臨床診療指引",, 2007.08.
5. 王水深、李君儀、簡禎彥、黃書健、周迺寬、紀乃新, "心臟血管外科自我診斷",, 2006.05.
6. 王水深、陳益祥、周迺寬, "血管外科學",, 2005.01.
7. 王水深、陳益祥、周迺寬, "血管外科手術須知",, 2005.01.

吳文超副教授 Wen-Chau Wu,Associate professor

※學術期刊論文 Journal articles & book chapters

1. Wen-Chau Wu*, Mao-Yuan Su, Chin-Cheng Chang, Wen-Yih Tseng, Kao-Lang Liu. ",Renal perfusion 3T MR imaging: A comparative study of arterial spin labeling and dynamic contrast-enhanced techniques", Radiology 2011;261:845-853.
2. Wen-Chau Wu*, Shu-Fen Jiang, Shun-Chung Yang, Shu-Hua Lien. ",Pseudocontinuous arterial spin labeling perfusion magnetic resonance imaging – A normative study of reproducibility in the human brain", Neuroimage 2011;56:1244-1250.
3. Amy Pinkham, James Loughead, Kosha Ruparel, Wen-Chau Wu*, Eve Overton, Raquel Gur, Ruben Gur. ",Resting quantitative cerebral blood flow in schizophrenia measured by pulsed arterial spin labeling perfusion MRI", Psychiatry Res 2011;194:64-72.
4. Julian Lim, Wen-Chau Wu*, Jiongjiong Wang, John A. Detre, David F. Dinges, Hengyi Rao. ",Imaging brain fatigue from sustained mental workload: An ASL perfusion study of the time-on-task effect", Neuroimage 2010;49:3426-3435.
5. Wen-Chau Wu*, Varsha Jain, Cheng Li, Mariel Giannetta, Hallam Hurt, Felix W. Wehrli, Danny J. Wang. ",In vivo venous blood T1 measurement using inversion recovery true-FISP in children and adults", Magn Reson Med 2010;64:1140-1147.

※研討會論文 Conference & proceeding papers

1. Wen-Chau Wu*, "Detecting cerebral perfusion territories and arterial source locations with minimal prior planning using harmonically encoded pseudocontinuous arterial spin labeling", Proc. ISMRM Ann. Meeting, Melbourne, Australia, 2012.
2. Wen-Chau Wu*, Mao-Yuan Su, Chin-Cheng Chang, Kao-Lang Liu. ",A reinvestigation of the feasibility and reproducibility of perfusion MRI in the kidneys", Proc. ISMRM Ann. Meeting, Melbourne, Australia, 2012.
3. Wen-Chau Wu*, "Mapping cerebral blood flow territories using harmonic encoding pseudo-continuous arterial spin labeling, fuzzy clustering, and independent component analysis", Proc. ISMRM Ann. Meeting, Montreal, Canada, 2011.
4. Hsiao-Wen Chung, Wen-Chau Wu*,. ",Error propagation in CMRO2 derivations using CBF and BOLD imaging", Proc. ISMRM-ESMRMB Joint Ann. Meeting, Stockholm, Sweden, 2010.
5. Wen-Chau Wu*, Yufen Chen, Jiongjiong Wang, John A. Detre. ",Reproducibility of functional connectivity measured by BOLD and perfusion", Proc. Human Brain Mapping Ann. Meeting, Barcelona, Spain, 2010.
6. Wen-Chau Wu*. ",Caffeine reduces resting-state BOLD functional connectivity", Proc. ISMRM-ESMRMB Joint Ann. Meeting, Stockholm, Sweden, 2010.

楊泮池教授 Pan-Chyr Yang, Professor

※學術期刊論文 Journal articles & book chapters

1. Su KY, Chen HY, Li KC, Kuo ML, Yang James CH, Chan WK, Ho BC, Chang GC, Shih JY, Yu SL, Yang PC, "Pre-treatment EGFR T790M mutation predicts shorter EGFR-TKI response duration in NSCLC patients",, J Clin Oncol. 2012 Jan 3. [Epub ahead of print]
2. Lin JC, Wu YY, Wu JY, Lin TC, Wu CT, Chang YL, Jou YS, Hong TM, Yang PC, "TROP2 is Epigenetically Inactivated and Modulates IGF-1R Signaling in Lung Adenocarcinoma",, EMBO Molecular Medicine 2012
3. Wang JY, Shu CC, Lee CH, Yu CJ, Lee LN, Yang PC, "Interferon-gamma release assay and Rifampicin therapy for household contacts of tuberculosis",, J Infect. 2011 Dec 19. [Epub ahead of print]
4. Wu SG, Kuo YW, Chang YL, Shih JY, Chen YH, Tsai MF, Yu CJ, Yang CH, Yang PC, "EML4-ALK translocation predicts better outcome in lung adenocarcinoma patients with wild-type EGFR",, J Thorac Oncol. 2012 Jan;7(1):98-104.
5. Lu CH, Hsiao CH, Chang YC, Lee JM, Shih JY, Wu LA, Yu CJ, Liu HM, Shih TT, Yang PC, "Percutaneous computed tomography-guided coaxial core biopsy for small pulmonary lesions with ground-glass attenuation",, J Thorac Oncol. 2012 Jan;7(1):143-50.
6. Lee YM, Lee JY, Ho CC, Hong QS, Yu SL, Tzeng CR, Yang PC, Chen HW, "MicroRNA 34b as a tumor suppressor in estrogen-dependent growth of breast cancer cells",, Breast Cancer Res. 2011 Nov 23;13(6):R116. [Epub ahead of print]
7. Wang WL, Pan SH, Chang YL, Wu CT, Hong TM, Yang PC, "Phosphorylation of LCRMP-1 by GSK3βpromotes filopoda formation, migration and invasion abilities in lung cancer cells",, PLoS One. 2012Chen PS, Su JL, Tarn WY, Wang MY, Hsu HC, Lin MT, Chu CY, Hua KT, Chen CN, Kuo TC, Chang KJ,, Hsiao M, Chang YW, Chen JS, Yang PC, Kuo ML, "MiR-107 Promotes Tumor Progression by Targeting the Let-7 MicroRNA in Mice and Humans. J Clin Invest 2011.
8. Chang TH, Tsai MF, Su KY, Wu SG, Huang CP, Yu SL, Yu YL, Chou-Chin Lan CC, Yang CH, Lin SB, Wu CP, Shih JY, Yang PC, "Slug confers resistance to the epidermal growth factor receptor tyrosine kinase inhibitor",, Am J Respir Crit Care Med 201;183(8):1071-9.
9. Ho BC, Yu SL, Chen JJW, Chang SY, Yan BS, Hong, QS, Singh S, Kao CL, Chen HY, Su KY, Li KC, Cheng CL, Cheng HW, Lee JY, Lee CN, Yang PC, "Enterovirus-induced miR-141 contributes to shutoff of host protein translation by targeting the translation initiation factor eIF4E",, Cell Host Microbe 2011;9(1):58-69
10. Wu YY, Peck K, Chang YL, Pan SH, Cheng YF, Lin JC, Yang RB, Hong TM, Yang PC, "SCUBE3 is an endogenous TGF-receptor ligand and regulates epithelial-mesenchymal transition in lung cancer",, Oncogene 2011; 30(34):3682-93
11. Yuan SS, Chen HY, Hsu YC, Su KY, Chang GC, Chen HW, Chen CY, Yu CJ, Shih JY, Lee YC, Chang YL, Cheng CL, Hsu CP, Hsia JY, Lin CY, Wu G, Liu CH, Wang CD, Yang KC, Chen YW, LaiYL, Hsu CC, Lin TJ, Yang TY, Chen KC, Hsu KH, Chen JJW, Yu SL, Li KC, Yang PC, "Clustered genomic alterations in chromosome 7p dictate outcomes and targeted treatment responses of lung adenocarcinoma with EGFR-activating mutations",, J Clin Oncol 2011;29(25):3435-42
12. Pan SH, Chao YC, Hung PH, Chen HY, Yang SC, Chang YL, Wu CT, Chang CC, Wang WL, Chan WK, Wu YY, Che TF, Wang LK, Lin CY, Lee YC, Kuo ML, Lee CH, Chen JJW, Hong TM, Yang PC, "The ability of LCRMP-1 to promote cancer invasion by enhancing filopodia formation is antagonized by CRMP-1",, J Clin Invest 2011;121(8):3189-205.
13. Lin PY, Yang PC, "Circulating miRNA signature for early diagnosis of lung cancer",, EMBO Molecular Medicine 2011;8:436-7
14. Chen PS, Su JL, Cha ST, Tarn WY, Wang MY, Hsu HS, Lin MT, Chu CY, Hua KT, Chen CN, Kuo TC, Chang KJ, Hsiao M, Chen JS, Yang PC, Kuo ML, "MiR-107 promotes tumor progression by targeting the Let-7 microRNA in mice and humans",, J Clin Invest 2011;21(9):3442-55.
15. Shih JY, Yang PC, "The EMT regulator Slug and lung carcinogenesis",, Carcinogenesis 2011;32: 1299-304.
16. Lee JY, Lee YM, Chang GC, Yu SL, Hsieh WY, Chen JJ, Chen HW, Yang PC, "Curcumin induces EGFR degradation in lung adenocarcinoma and modulates p38 activation in intestine: The versatile adjuvant for gefitinib therapy",, PLoS One. 2011;6(8):e23756. Epub 2011 Aug 17

17. Chung KP, Huang YT, Chang YL, Yu CJ, Yang CH, Chang YC, Shih JY, Yang PC, "Clinical Significance of TTF-1 in Advanced Lung Adenocarcinoma under EGFR Tyrosine Kinase Inhibitor Treatment",, Chest. Epub 2011 Jul 28.

18. Tsai TH, Su KY, Wu SG, Chang YL, Luo SC, Jan IS, Yu CJ, Yu SL, Shih JY, Yang PC, "RNA is Favorable for Analyzing EGFR Mutations in Malignant Pleural Effusion of Lung Cancer",, Eur Respir J. Epub 2011 Jun 30.

19. Lai CY, Yu SL, Hsieh MH, Chen CH, Chen HY, Wen CC, Huang YH, Hsiao PC, Hsiao CK, Liu CM, Yang PC, Hwu HG, Chen WJ, "MicroRNA expression aberration as potential peripheral blood biomarkers for schizophrenia",, PLoS One. 2011;6(6):e21635. Epub 2011 Jun 29.

20. Liu YC, Yen HY, Chen CY, Chen CH, Cheng PF, Juan YH, Chen CH, Khoo KH, Yu CJ, Yang PC, Hsu TL, Wong CH, "Sialylation and fucosylation of epidermal growth factor receptor suppress its dimerization and activation in lung cancer cells",, Proc Natl Acad Sci U S A. 2011 Jul 12;108(28):11332-7.

21. Yang X, Shi Q, Yang SC, Chen CY, Yu SL, Bastow KF, Morris-Natschke SL, Wu PC, Lai CY, Wu TS, Pan SL, Teng CM, Lin JC, Yang PC, Lee KH, "Antitumor agents 288: design, synthesis, SAR, and biological studies of novel heteroatom-incorporated antofine and cryptopleurine analogues as potent and selective antitumor agents",, J Med Chem. 2011 Jul 28;54(14):5097-107.

22. Lee JY, Lee YM, Chang GC, Yu SL, Hsieh WY, Chen JJ, Chen HW, Yang PC, "Curcumin induces EGFR degradation in lung adenocarcinoma and modulates p38 activation in intestine: the versatile adjuvant for gefitinib therapy",, PLoS One. 2011;6(8):e23756. Epub 2011 Aug 17.

23. Lee MR, Keng LT, Shu CC, Lee SW, Lee CH, Wang JY, Lee LN, Yu CJ, Yang PC, "Risk factors for Mycobacterium chelonae-abscessus pulmonary disease persistence and deterioration",, J Infect. 2011 Nov 12. [Epub ahead of print]

24. Ho MJ, Yu KH, Hirsh D, Huang TS, Yang PC, "Does One Size Fit All? Building a Framework for Medical Professionalism",, Acad Med. 2011 Nov;86(11):1407-1414.

25. Hsieh WY, Chou CC, Ho CC, Yu SL, Chen HY, Chou HY, Chen JJ, Chen HW, Yang PC, "Single-Walled Carbon Nanotubes Induce Airway Hyper-Reactivity and Parenchymal Injury in Mice",, Am J Respir Cell Mol Biol. 2011 Sep 29. [Epub ahead of print]

26. Travis WD, Brambilla E, Noguchi M, Nicholson AG, Geisinger K, Yatabe Y, Powell CA, Beer D, Riely G, Garg K, Austin JH, Rusch VW, Hirsch FR, Jett J, Yang PC, Gould M, "International association for the study of lung cancer/American Thoracic Society/European Respiratory Society: international multidisciplinary classification of lung adenocarcinoma: executive summary",, Proc Am Thorac Soc. 2011 Sep;8(5):381-5

27. Pan SH, Chao YC, Hung PH, Chen HY, Yang SC, Chang YL, Wu CT, Chang CC, Wang WL, Chan WK, Wu YY, Che TF, Wang LK, Lin CY, Lee YC, Kuo ML, Lee CH, Chen JJW, Hong TM, Yang PC, "LCRMP-1/CRMP-1: A Novel Pathway that Regulates Cancer Invasion and Metastasis",, J Clin Invest 2011

28. Shiao TH, Chang YL, Yu CJ, Chang YC, Hsu YC, Chang SH, Shih JY, Yang PC, "Epidermal growth factor receptor mutations in small cell lung cancer: a brief report",, J Thorac Oncol 2011;6(1):195-8.

29. Wu YY, Peck K, Chang YL, Pan SH, Cheng YF, Lin JC, Yang RB, Hong TM, Yang PC, "SCUBE3 is an endogenous TGF-β receptor ligand and regulates epithelial-mesenchymal transition in lung cancer",, Oncogene 2011 in press

30. Yuan A, Shih CM, Lin CY, Chen CY, Cheng HW , Chen YF, Chen JJW, Chen JH, Yang PC, Chang C, "valuation of functional and structural characteristics of tumor angiogenesis in lung cancers overexpressing different VEGF isoforms by DCE and SSCE MR imaging",, PLoS One 2011 in press.

31. Yuan SS, Chen HY, Hsu YC, Su KY, Chang GC, Chen HW, Chen CY, Yu CJ, Shih JY, Lee YC, Chang YL, Cheng CL, Hsu CP, Hsia JY, Lin CY, Wu G, Liu CH, Wang CD, Yang KC, Chen YW, LaiYL, Hsu CC, Lin TJ, Yang TY, Chen KC, Hsu KH, Chen JJW, Yu SL, Li KC, Yang PC, "Clustered genomic alterations in chromosome 7p dictate outcomes and targeted treatment responses of lung adenocarcinoma with EGFR-activating mutations",, J Clin Oncol 2011

32. Chang TP, Yu SL, Lin SY, Hsiao YJ, Chang GC, Yang PC, Chen JJ, "Tumor suppressor HLJ1 binds and functionally alters nucleophosmin via activating enhancer binding protein 2alpha complex formation",, Cancer Res 2010 Feb 15;70(4):1656-67. Epub 2010 Feb 9.

33. Chen BZ, Yu SL, Singh S, Kao LP, Tsai ZY, Yang PC, Chen BH, Li SS, "Identification of microRNAs expressed highly in pancreatic islet-like cell clusters differentiated from human embryonic stem cells",, Cell Biol Int 2010 Aug 25.

34. Chen CY, Hsu CL, Chang CH, Chen KY, Yu CJ, Yang PC, "Hemothorax in a medical intensive care unit: incidence, comorbidity and prognostic factors",, J Formos Med Assoc 2010 Aug;109(8):574-81.

35. Chen KY, Chen JH, Shih JY, Yang CH, Yu CJ, Yang PC, "Octogenarians with advanced non-small cell lung cancer: treatment modalities,

survival, and prognostic factors",, J Thorac Oncol 2010;5:82-9.

36. Chen WT, Thirumalai D, Shih TT, Chen RC, Tu SY, Lin CI, Yang PC, "Dynamic Contrast-Enhanced Folate-Receptor-Targeted MR Imaging Using a Gd-loaded PEG-Dendrimer-Folate Conjugate in a Mouse Xenograft Tumor Model",, Mol Imaging Biol 2010 Apr;12(2):145-54

37. Cheng SL, Wang HC, Yang PC, Kuo SH, "Risk factors for high mesothelial cell counts in HIV-negative patients with tuberculous pleural effusion",, J Formos Med Assoc 2010 Jun;109(6):456-62.

38. Chien JY, Huang RM, Wang JY, Ruan SY, Chien YJ, Yu CJ, Yang PC, "Hepatitis C virus infection increases hepatitis risk during anti-tuberculosis treatment",, Int J Tuberc Lung Dis 2010 May;14(5):616-21.

39. Chien MY, Wu YT, Lee PL, Chang YJ, Yang PC, "Inspiratory muscle dysfunction in patients with severe obstructive sleep apnoea",, Eur Respir J 2010 Feb;35(2):373-80.

40. Hsiung CA, Lan Q, Hong YC, Chen CJ, Hosgood HD, Chang IS, Chatterjee N, Brennan P, Wu C, Zheng W, Chang GC, Wu T, Park JY, Hsiao CF, Kim YH, Shen H, Seow A, Yeager M, Tsai YH, Kim YT, Chow WH, Guo H, Wang WC, Sung SW, Hu Z, Chen KY, Kim JH, Chen Y, Huang L, Lee KM, Lo YL, Gao YT, Kim JH, Liu L, Huang MS, Jung TH, Jin G, Caporaso N, Yu D, Kim CH, Su WC, Shu XO, Xu P, Kim IS, Chen YM, Ma H, Shen M, Cha SI, Tan W, Chang CH, Sung JS, Zhang M, Yang TY, Park KH, Yuenger J, Wang CL, Ryu JS, Xiang Y, Deng Q, Hutchinson A, Kim JS, Cai Q, Landi MT, Yu CJ, Park JY, Tucker M, Hung JY, Lin CC, Perng RP, Boffetta P, Chen CY, Chen KC, Yang SY, Hu CY, Chang CK, Fraumeni JF Jr, Chanock S, Yang PC, Rothman N, Lin D, "The 5p15.33 locus is associated with risk of lung adenocarcinoma in never-smoking females in Asia",, PLoS Genet 2010 Aug 5;6(8) pii: e1001051. (Co-senior author)

41. Hsu HL, Lai CC, Yu MC, Yu FL, Lee JC, Chou CH, Tan CK, Yang PC, Hsueh PR, "Clinical and microbiological characteristics of urine culture-confirmed genitourinary tuberculosis at medical centers in Taiwan from 1995 to 2007",, Eur J Clin Microbiol Infect Dis 2010 Oct 15.

42. Huang CT, Yen RF, Cheng MF, Hsu YC, Wei PF, Tsai YJ, Tsai MF, Shih JY, Yang CH, Yang PC, "Correlation of F-18 fluorodeoxyglucose-positron emission tomography maximal standardized uptake value and EGFR mutations in advanced lung adenocarcinoma",, Med Oncol 2010 Mar;27(1):9-15.

43. Kuo YW, Jerng JS, Shih JY, Chen KY, Yu CJ, Yang PC, "The prognostic value of the simplified comorbidity score in the treatment of small cell lung carcinoma",, J Thorac Oncol 2010 Dec 17.

44. Lai CC, Tan CK, Chou CH, Hsu HL, Liao CH, Huang YT, Yang PC, Luh KT, Hsueh PR, "Increasing incidence of nontuberculous mycobacteria",, Taiwan, 2000-2008. Emerg Infect Dis 2010 Feb;16(2):294-6.

45. Liao YC, Liao WY, Shun SC, Yu CJ, Yang PC, Lai YH, "Symptoms, psychological distress, and supportive care needs in lung cancer patients",, Support Care Cancer 2010 Oct 15.

46. Lim CS, Lee CH, Chien YJ, Wang JY, Lee LN, Yu CJ, Yang PC, "TAMI group: Culture result of smear-positive sputum samples after 2 months of antituberculous treatment",, Eur Respir J 2010;35:218-20.

47. Lin PY, Chang YC, Chen HY, Chen CH, Tsui HC, Yang PC, "Tumor size matters differently in pulmonary adenocarcinoma and squamous cell carcinoma",, Lung Cancer 2010 Mar;67(3):296-300.

48. Lin PY, Yu SL, Yang PC, "MicroRNA in lung cancer",, Br J Cancer 2010 Oct 12;103(8):1144-8. Epub 2010 Sep 21. Review.

49. Lin RK, Wu CY, Chang JW, Juan LJ, Hsu HS, Chen CY, Lu YY, Tang YA, Yang YC, Yang PC, Wang YC, "Dysregulation of p53/Sp1 control leads to DNA methyltransferase-1 overexpression in lung cancer",, Cancer Res 2010 Jul 15;70(14):5807-17. Epub 2010 Jun 22.

50. Liu WL, Kuo PH, Ku SC, Huang PM, Yang PC, "Impact of therapeutic interventions on survival of patients with hepatic hydrothorax",, J Formos Med Assoc 2010 Aug;109(8):582-8.

51. Lo YL, Hsiao CF, Jou YS, Chang GC, Tsai YH, Su WC, Chen YM, Huang MS, Chen HL, Yang PC, Chen CJ, Hsiung CA, "ATM polymorphisms and risk of lung cancer among never smokers",, Lung Cancer 2010 Aug;69(2):148-54..

52. Lu TP, Tsai MH, Lee JM, Hsu CP, Chen PC, Lin CW, Shih JY, Yang PC, Hsiao CK, Lai LC, Chuang EY, "Identification of a novel biomarker, SEMA5A, for non-small cell lung carcinoma in nonsmoking women",, Cancer Epidemiol Biomarkers Prev 2010 Oct;19(10):2590-7.

53. Pan SH, Chao YC, Chen HY, Hung PF, Lin PY, Lin CW, Chang YL, Wu CT, Lee YC, Yang SC, Hong TM, Yang PC, "Long form collapsin response mediator protein-1 (LCRMP-1) expression is associated with clinical outcome and lymph node metastasis in non-small cell lung cancer patients",, Lung Cancer 2010;67:93-100.

54. Shu CC, Wu HD, Yu MC, Wang JT, Lee CH, Wang HC, Wang JY, Lee LN, Yu CJ, Yang PC, "Taiwan Anti-Mycobacteria Investigation (TAMI) Group: Use of high-dose inhaled corticosteroids is associated with pulmonary tuberculosis in patients with chronic obstructive pulmonary disease",, Medicine (Baltimore) 2010;89:53-61.

55. Tan EH, Ramlau R, Pluzanska A, Kuo HP, Reck M, Milanowski J, Au JS, Felip E, Yang PC, Damyanov D, Orlov S, Akimov M, Delmar P, Essioux L, Hillenbach C, Klughammer B, McLoughlin P, Baselga J, "A multicentre phase II gene expression profiling study of putative relationships between tumour biomarkers and clinical response with erlotinib in non-small-cell lung cancer",, Ann Oncol 2010 Feb;21(2):217-22.

56. Wang CY, Hsiao YC, Jerng JS, Ho CC, Lai CC, Yu CJ, Hsueh PR, Yang PC, "Diagnostic value of procalcitonin in pleural effusions",, Eur J Clin Microbiol Infect Dis 2010 Oct 13.

57. Wang CY, Wang HC, Li JM, Wang JY, Yang KC, Ho YK, Lin PY, Lee LN, Yu CJ, Yang PC, Hsueh PR, "Invasive infections of aggregatibacter (actinobacillus) actinomycetemcomitans",, J Microbiol Immunol Infect. 2010;43(6):491-7.

58. Wang JY, Hsu HL, Yu MC, Chiang CY, Yu FL, Yu CJ, Lee LN, Yang PC, "the TAMI Group: Mixed infection with Beijing and non-Beijing strains in pulmonary tuberculosis in Taiwan: prevalence, risk factors, and dominant strain, Clin Microbiol Infect 2010 Oct 14.

59. Wang JY, Wang JT, Tsai TH, Hsu CL, Yu CJ, Hsueh PR, Lee LN, Yang PC, "Adding moxifloxacin is associated with a shorter time to culture conversion in pulmonary tuberculosis,", Int J Tuberc Lung Dis 2010;14:65-71.

60. Wang YT, Tsai CF, Hong TC, Tsou CC, Lin PY, Pan SH, Hong TM, Yang PC, Sung TY, Hsu WL, Chen YJ, "An informatics-assisted label-free quantitation strategy that depicts phosphoproteomic profiles in lung cancer cell invasion,", J Proteome Res 2010 Nov 5;9(11):5582-97.

61. Wu JY, Shih JY, Yang CH, Chen KY, Ho CC, Yu CJ, Yang PC, "Second-line treatments after first-line gefitinib therapy in advanced nonsmall cell lung cancer,", Int J Cancer 2010;126:247-55.

62. Wu JY, Wu SG, Yang CH, Chang YL, Chang YC, Hsu YC, Shih JY, Yang PC, "Comparison of gefitinib and erlotinib in advanced NSCLC and the effect of EGFR mutations,", Lung Cancer 2010 Sep 8.

63. Wu JY, Yang CH, Hsu YC, Yu CJ, Chang SH, Shih JY, Yang PC, "Use of cetuximab after failure of gefitinib in patients with advanced non-small-cell lung cancer,", Clin Lung Cancer 2010 Jul 1;11(4):257-63.

64. Wu JY, Yu CJ, Shih JY, Yang CH, Yang PC, "Influence of first-line chemotherapy and EGFR mutations on second-line gefitinib in advanced non-small cell lung cancer,", Lung Cancer 2010;67(3):348-54.

65. Wu SG, Yang CH, Yu CJ, Lee JH, Hsu YC, Chang YL, Shih JY, Yang PC, "Good response to pemetrexed in patients of lung adenocarcinoma with epidermal growth factor receptor (EGFR) mutations,", Lung Cancer 2010 Nov 24.

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

一、教師得獎 Award

學術期刊論文 Journal articles & book chapters

※2012

1. 成佳憲，臺灣大學101學年度學術研究績效獎勵（傑出期刊2）2012

※2011

2. 李百祺，第八屆國家新創獎(學研組)，社團法人國家生技醫療產業策進會，2011
3. 李百祺，研發創新傑出獎，國立臺灣大學，2011
4. 李嗣涔，英國艾賽斯特大學榮譽博士學位, 2011
5. 孫啓光，國立臺灣大學-特聘教授，國立臺灣大學，2011
6. 陳志宏，ADHD-200 Global Competition, winner of the Most Innovative Neuroscientific Examination of ADHD Contest，2011
7. 陳志宏，SEMBA best paper award, 2011 (Advanced technologies for the next generation MRI: Wideband MRI E. L. Wu, J-H. Chen, and T-D. Chiueh)
8. 陳志宏，國立臺灣大學電機資訊學院100學年度「學術貢獻獎」,2011
9. 成佳憲，99學年度國科會補助大專校院獎勵特殊優秀人才措施（獎勵人員傑出研究表現）,2011
10. 阮雪芬，日本學術振興會邀請赴日研究獎助，日本學術振興會，2011
11. 孫維仁，北京科技大學海峽兩岸大學生精英論壇一等獎，2011
12. 孫維仁，第六屆龍騰微笑創業大賽佳作，2011
13. 孫維仁，電信創新應用大賽應用創意組亞軍，2011
14. 孫維仁，工研院最佳產學獎，2011
15. 林啓萬，2011臺灣生醫暨生農產業選秀大賽-潛力新秀獎，2011
16. 林啓萬, Y.-H. Liang, Y.-F. Lin, C.-H. Chuang, J.-B. Chang, C.-W. Lin , “EVALUATION OF GC/MS ANALYSIS SYSTEM FOR LOW CONCENTRATION QUANTITATIVE DETERMINATION OF OPIUM, “, 16th ACCS , Nov. 14th-17th, 2011,Taiwan (ACCS2011 BEST POSTER)
17. 邱銘章，臺灣大學100學年度學術研究績效獎勵（傑出期刊1、優良期刊1）
18. 李枝宏，特約研究計畫獎，國科會，2011-2014

※2010

19. 李百祺，國科會98年度傑出研究獎，國科會，2010
20. 賴飛羆，傑出資訊人才獎~資訊教育學術研究獎項，資訊月活動委員會2010
21. 賴飛羆，IBM教授獎(IBM Faculty Awards) ，IBM，2010

22. 陳志宏，國科會99年度傑出研究獎，國科會，2010

23. 陳永耀，99學年度指導碩士班學生獲得中國電機工程學會青年論文獎第三名，2010

24. 孫啓光，Photonics Society(中華民國光電學會99年光學工程獎章)，中華民國光電學會，2010

25. 孫啓光，國家衛生研究院傑出創新研究計畫獎，國家衛生研究院，2010-2016

26. 林發暄，芬蘭傑出教授獎，芬蘭國家科學院，2010-2014

27. 林發暄，腦部聯結研究獎，第17屆國際生物磁學會議(克羅埃西亞)，2010

28. 林啓萬，2010第十屆旺宏金矽獎-設計組優勝獎，旺宏電子股份有限公司、財團法人旺宏教育基金會，2010

29. 林啓萬，2010晶片設計中心(CIC)特別設計獎(疼痛晶片)，國家晶片系統設計中心，2010

30. 林啓萬，2010臺灣大學創新競賽冠軍獎(blood hunter 100%)，國立臺灣大學，2010

31. 傅楸善, NTU team got 3rd and gold medal among 103 final teams among 8000 regional teams in ACM ICPC (International Collegiate Programming Contest), Harbin, China, Feb. 1-6, 2010

32. 邱銘章，臺灣大學99學年度學術研究績效獎勵（傑出期刊1、優良期刊1）

33. 鍾孝文，傑出學者研究獎，國科會，2009-2011

34. 王水深，國立臺灣大學教學優良獎，2010.

二、專利 Patents

※2012

1. 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-)。
2. 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).
3. 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-)。
4. Tseng YJ, Lin FY, US-61603501 “Structure-Based Fragment Hopping For Lead Optimization And Improvement In Synthetic Accessibility”, (申請日2012/02/27)
5. 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-)。

※2011

1. Wideband magnetic resonance imaging apparatus and method, J.-H. Chen and T.-D. Chiueh (USA patent granted, 8049496, 2011/11/01).
2. Microfluidic device with vertical injection aperture, Jun Xie, Shashi Thutupalli, Stacey Joy Kennerly, Wei-Cheng Tian, Erin Jean Finehout, Li Zhu, and Oliver Charles Boomhower (USA patent granted, US8029743, 2011/10)
3. Method and Apparatus for Simultaneously acquiring multiple slices/slabs in magnetic resonance system, J.-H. Chen and T.-D. Chiueh (USA patent granted, 8022701, 2011/09/20).

4. Use of curcumin or its analogues in cancer therapy utilizing epidermal growth factor receptor tyrosine kinase inhibitor. ,Chen Huei-Wen, Lee; Jen-Yi, Yang Pan-Chyr,Yu Sung-Liang,Chen Jian-Wei, Yang Chih-Hsin, Ho Chao-Chi,Lee Kuo-Hsiung, Tseng Yufeng Jane,Chang Gee-Chen (US Patent Application No. 20110224205., September 15, 2011)
5. Method and Apparatus for Signal Enhancement in Magnetic Resonance Imaging, J.-H. Chen and T.-D. Chiueh (filed for U.S. Patent, 13/209479, 2011/07/12).
6. 合成清晰影像的裝置及方法，林憶群、陳智偉、傅楸善、施明煌，中華民國I343207 (有效日2011/06/01-)。
7. Automatic ultrasonic scanning system and scanning method thereof, P.-C. Li (filed for US Patent, 13/117482, 2011/5/27)
8. Medical imaging system and medical imaging method thereof, P.-C. Li and W.-Y. Chen (filed for US Patent, 13/116286, 2011/5/26)
9. Image Processing System Using Motion Vectors and Predetermined Ratio, C. S. Fuh, J. P. Chiu and J. F. Chen (USA patent granted, 7/7944475, 2011/05/17-).
10. 封裝之攝影模組，孫維仁、林威騰(專利權人：孫維仁、林威騰、昇航科技有限公司)，中華民國M403669 (有效日2011/05/11-)。
11. 超聲波自動掃描系統及其掃描方法，李百祺，中國大陸專利申請號201110119501.8 (申請日2011/05/10，2011/06/27初審合格)。
12. 光聲成像系統、編碼?射發射裝置與光聲訊號接收裝置，李百祺，中國大陸專利申請號201110113550.0 (申請日2011/05/04，2011/06/23初審合格)。
13. 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，中國大陸專利申請號201110113561.9 (申請日2011/05/04，2011/06/23初審合格)。
14. 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，中國大陸專利申請號201110113547.9 (申請日2011/05/04，2011/06/24初審合格)。
15. 醫學成像系統及其醫學成像方法，李百祺、陳婉雅，中國大陸專利申請號201110113548.3 (申請日2011/05/04，2011/06/24初審合格)。
16. Photoacoustic imaging system, coded laser emitting apparatus and photoacoustic signal receiving apparatus, P.-C. Li (filed for US Patent, 13/098611, 2011/05/02)
17. 超音波自動掃描系統及其掃描方法，李百祺，中華民國專利申請號100114164(申請日2011/04/22)。
18. Injection method for microfluidic chips, Wei-Cheng Tian et. al. (USA patent granted, US7927476, 2011/04).
19. Ultrasonic diagnostic system and portable ultrasonic diagnostic apparatus thereof, P.-C. Li and Y.-F. Li (filed for US Patent, 13/071856, 2011/3/25)
20. Wireless power transmission system, wireless power transmitting apparatus and wireless power receiving apparatus, P.-C. Li (filed for US Patent, 13/071813, 2011/03/25)
21. 雙向內視鏡轉向機構及四向內視鏡轉向機構，孫維仁、林威騰(專利權人：孫維仁、林威騰、昇航科技有限公司)，中華民國M400299 (有效日2011/03/21-)。
22. 攝影模組，孫維仁、林威騰(專利權人：孫維仁、林威騰、昇航科技有限公司)，中華民國M400594 (有效日2011/03/21-)。
23. Method and Apparatus for Acquiring Magnetic Resonance Imaging Signals, J.-H. Chen and T.-D. Chiueh (filed for U.S. Patent, 13/050715, 2011/03/17).
24. 醫療無線通訊系統，戴君益(專利權人：孫維仁、昇航科技有限公司)，中華民國M400062 (有效日2011/03/11-)。
25. 攝影模組，林威騰(專利權人：孫維仁、林威騰、昇航科技有限公司)，中華民國M400093 (有效日2011/03/11-)。

26. Micro-electromechanical system (MEMS) based current and magnetic field sensor having capacitive sense components, Anis Zribi, Glenn Claydon, Christopher Kapusta, Laura Meyer, Ertugal Berkcan, and Wei-Cheng Tian (USA patent granted, US7901970, 2011/03).

27. 應用於病患自控式止痛的資料收集及分析裝置，孫維仁(專利權人：孫維仁、戴君益)，中華民國201108018 (有效日2011/03/01-)。

28. 薑黃素或其類似物於使用上皮細胞生長因子接受器酪胺酸激酶抑制劑之癌症醫療之用途，陳惠文 、李仁譯 、楊泮池 、俞松良 、陳健尉、楊志新、何肇基、李國雄、曾宇鳳、張基晟，中華民國專利申請號100104603(申請日2011/02/11)

29. 內視鏡裝置，孫維仁、陳建章(專利權人：孫維仁、醫電鼎眾股份有限公司)，中華民國201103486 (有效日2011/02/01-)。

※2010

1. 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，中華民國專利申請號099147334(申請日2010/12/31)。
2. 醫學成像系統及其醫學成像方法，李百祺、陳婉雅，中華民國專利申請號099145923(申請日2010/12/24)。
3. 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，中華民國專利申請號099144241(申請日2010/12/16)。
4. 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，中華民國專利申請號099144239(申請日2010/12/16)。
5. 自動對焦方法，謝銘和、傅楸善、黃春福、玉鴻基，中華民國I333115 (有效日2010/11/11-)。
6. 內視鏡前端軟式材料彎曲結構，孫維仁、林威騰，中華民國M390768 (有效日2010/10/21-)。
7. White Balance Adjustment Method for a Digital Image Capturing Device, P. M. Wang, C. S. Fuh, C. N. Yeh, C. H. Wu, and C. F. Lin (USA patent granted, 6/7812862, 2010/10/12-).
8. Cooling apparatus for nuclear magnetic resonance imaging RF coil, J.-H. Chen(filed for U.S. Patent, 2011/0056228, 2010/09/10).
9. 一種藉由介電常數差異使電磁波能量集中化，管傑雄、李偕瑋、何恭竹，中華民國專利申請號099129872 (申請日2010/09/03)。
10. 血管支架之加工方法，陳益祥、陳政順、周迺寬、林聖堯，中華民國專利申請號099133748 (申請日2010/09)。
11. Methods of making and using integrated and testable sensor array, Robert Gideon Wodnicki, Stacey Joy Kennerly, Wei-Cheng Tian, Kevin Matthew Durocher, David Martin Mills, Charles Gerard Woychik, and Lowell Scott Smith (USA patent granted, US7781238, 2010/08).
12. Imaging probe, P.-C. Li and B.-Y. Hsieh (filed for US Patent, 12/844533, 2010/7/27).
13. 內視鏡光學結構，孫維仁、林威騰，中華民國M384636 (有效日2010/07/21-)。
14. 內視鏡前端組合式彎曲結構，孫維仁、林威騰，中華民國M384635 (有效日2010/07/21-)。
15. 發光二極體光源結構，孫維仁、林威騰，中華民國M384965 (有效日2010/07/21-)。
16. 結腸灌流內視鏡，孫維仁、林威騰，中華民國M384637 (有效日2010/07/21-)。
17. 影像探頭，李百祺、謝寶育，中華民國專利申請號099118612(申請日2010/06/08)。
18. Electrophoresis system and method, Wei-Cheng Tian, Shashi Thutupalli, Li Zhu, Anthony John Murray, Erin Jean Finehout, and Jun Xie (USA patent granted, US7740748, 2010/06)
19. 監控病人疼痛狀態之裝置及其方法，孫維仁(專利權人：國立臺灣大學)，中華民國201019257 (有效日2010/05/16-)。
20. Ultrasonic image processing system and ultrasonic image processing method thereof, P.-C. Li (filed for U.S. Patent, 12/757787, 2010/04/09).
21. 內視鏡診察系統，孫維仁、趙福杉(專利權人：國立臺灣大學)，中華民國201012429 (有效日2010/04/01-)。
22. Suppression of noise in MR images and MR spectroscopic images using signal space projection filtering, Fa-Hsuan Lin, issued on March 23, 2010 (United States Patent 7,683,620)

23. 多孔材料導管及其製造方法，王得耀、陳孟澤、黃義侑、孫維仁(專利權人：國立臺灣大學)，中華民國201010747 (有效日2010/03/16-)。

24. Methol and system for selective isolation of target biological molecules in a general prupose system, Scott Duthie, Wei-Cheng Tian, et. al. (20100029915, 2010/02).

25. 具預防血管狹窄之心血管支架，陳益祥、陳政順、周迺寬、虞希禹、林聖堯，中華民國專利申請號099103889 (申請日2010/02)。

26. Ultrasonic scanhead, P.-C. Li and J.-H. Liu (filed for U.S. Patent, 12/684895, 2010/01/08).

三、技術轉移 Technology Transfer

1. 林啓萬，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。
2. 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。
3. 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。
4. 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。