

出國報告（出國類別：其他）

第十三屆美洲華人生物科學國際研討 會

服務機關：核能研究所

姓名職稱：沈立漢 副所長

派赴國家：大陸廣州

出國期間：98年7月24日~100年7月30日

報告日期：100年8月25日

中文摘要

本次公差(100年7月24日至100年7月30日)係應美國 National Institute of Biomedical Imaging and Bioengineering, Dept of Health and Human Services, NIH, 兼本次大會主席 Dr. Xiaoyuan (Shawn) Chen 邀請出席由美洲華人生物科學學會及中山大學於廣州舉行之第 13 屆國際學術研討會，發表口頭論文及壁報論文各一篇。順道參觀廣州軍區廣州總醫院 PET/CT 中心及中山大學附屬第一醫院核醫學 PET/CT 中心，討論核醫分子影像兩岸發展現況和未來兩岸合作研究的可行性。

本次研討會共 12 場 Plenary 專題講演，74 場口頭論文發表 (Symposium Sessions)，每 Session 有 6~7 篇 oral，11 場生物教育課程，每場有 3~5 篇 oral，96 篇壁報論文發表，78 篇 Student Postdoctoral Award 論文及 5 篇 Chin-Min Hsiang Education Foundation Travel Award 論文。本人代表台灣核能研究所發表口頭論文 “New Trends in the Developments of Radiopharmaceuticals for Imaging Hypoxia and Neuropsychiatric Diseases in Taiwan” 及壁報論文 “New Trends in the Developments of Radiopharmaceuticals for Imaging Hypoxia in Taiwan”，獲肯定與好評。台灣學研界的設施，專業人才和技術尚領先大陸，而其運用充分資金全力推展，進步快速，未來科技合作研究應有國際村的觀念，截長補短，才能與世界同步進而領先。

本次研討會在兩岸對等尊重之氛圍下舉行，獲得華人在世界各地生物科技之研發領域，方向和成果等資訊，並利用機會和大陸及國際知名華人學者專家討論交換意見，探討未來合作之可能性和方向，成果豐碩，有利兩岸生物科學合作交流與提升。

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一、目的

本次公差赴大陸廣州應邀參加華人生物科學學會及中山大學共同主辦的第 13 屆國際學術研討會，並參觀廣州軍醫廣州總醫院 PET/CT 中心及中山大學附屬第一醫院 PET/CT 中心。

本次研討會共 12 場 Plenary 專題講演，另口頭論文發表分 74 場 Symposium Sessions，每 Session 有 6~7 篇 oral，另有 11 場生物教育課程，每場有 3~5 篇 oral；C1：Stem cells biology and regenerative medicine，C2：Protein science，C3：Personalized medicine and cancer，C4：Small RNA and plant stress response，C5：Metabolic and endocrine diseases，C6：Plant growth and development，C7：Tropical diseases：basic research and control，C8：Cancer cell biology，C9：Immune memory and immunotherapy，C10：Neuroscience，C11：Structural biology of membrane proteins。壁報論文發表共 96 篇，另有 Student postdoctoral award 論文 78 篇及 Chin-Min Hsiang educations foundation travel award 論文 5 篇，擇優發給獎金以茲鼓勵。

本次研討會核能研究所發表口頭論文一篇，題目為“New Trends in the Developments of Radiopharmaceuticals for Imaging Hypoxia and Neuropsychiatric Diseases in Taiwan”，另發表壁報論文一篇，題目為“New Trends in the Developments of Radiopharmaceuticals for Imaging Hypoxia in Taiwan”，廣受重視與好評。

本次亦順道參觀廣州總醫院 PET/CT 中心，拜訪尹吉林主任，並拜訪中山大學附屬第一醫院核醫學 PET/CT 中心唐剛華主任，基礎建設正規劃建造中，但技術和人才尚與歐美先進實驗室，甚至台灣有 10 年的差距，大陸利用強大的經濟力量正設法迎頭追趕中。

本次公差赴大陸廣州，除了參加國際學術研討會，發表論文，提升台灣在國際舞台的能見度外，更了解華人在世界各地的研究領域與方向及大陸生物科學發展之現況與進展，知己知彼，除可建立兩岸核醫科技合作研究之橋樑外，使台灣成為世界一流之核醫藥物與分子影像研究中心之使命更有信心。

二、過程

此次公差赴大陸廣州應邀參加美洲華人生物科學學會及中山大學共同主辦的第 13 屆國際學術研討會，自 100 年 7 月 24 日起至 100 年 7 月 30 日止，共計 7 天，詳細行程如下：

| 行程 | | | | | 公差地點 | | 工作內容 |
|----|-------|-----|----|----|------|----|--|
| 月 | 日 | 星期 | 地點 | | 國名 | 地名 | |
| | | | 出發 | 抵達 | | | |
| 7 | 24 | 日 | 桃園 | 廣州 | 大陸 | 廣州 | 去程 |
| 7 | 25~29 | 一~五 | | | 大陸 | 廣州 | 應邀出席第 13 屆生物科學國際學術研討會，發表專題演講及 poster，並參觀廣州軍醫廣州總醫院 PET/CT 中心及中山大學附屬第一醫院 PET/CT 中心 |
| 7 | 30 | 六 | 廣州 | 桃園 | | | 返程 |

以下各行程細部內容分述如下：

(一)7 月 24 日(日)下午到達廣州，完成住宿、報到，並領取資料。

(二)7 月 25 日(一)至 7 月 29 日(五)：

本次係美國 National Institute of Biomedical Imaging and Bioengineering, Dept. of Health and Human Services, NIH, 兼本次大會主席 Dr. Xiaoyuan (Shawn) Chen 邀請出席專題演講(邀請函如附件一)。

1.大會開幕由美洲華人生物科學學會(SCBA)理事長蔣觀德主任及中山大學副校長 Dr. Mengfeng Li 致歡迎辭，接著由大陸衛生部長宣示第 12 的五年計畫，重點為「以轉化醫學為核心，大力提升醫學科技水平，強化醫藥衛生重點學科建設」(資料如附件二之 1 及二之 2)。大會主會場及議程如附件三及四。

2.Dr. Zhu Chen 主講”Translational Medicine as an Driving Force to Promote

Health Care Reform and to Benefit People's Health”.

重點結論節錄：

(1)大陸轉譯醫學之發展。

大陸癌症死亡率仍居高不下，自 1976 至 2000 年，五年存活率小幅提升；肝癌自 12%至 15%，而大腸直腸癌為 50%至 64%。

轉譯醫學自 Bench to Bedside 以符合病患需求，以臨床推動研究，關聯圖為附件五。

大陸之 Progress of Health Care Reform 如附件六。

大陸第 11 個五年計畫(2006~2010)在健康投資分配及第 12 個五年計畫(2011~2015)大幅提升，如附件七。

大陸建立轉譯醫學中心如附件八。另 2010 年大陸主要臨床訓練中心分佈圖如附件九，共有 236 個臨床重點專科建設項目，主要研究領域包括 Cancer, Cardiovascular diseases, Diabetes and Obesity,, Mental diseases, Emerging infectious diseases, Endemic diseases, Occupational health, Food-borne diseases 及 Stem cell and Regenerative medicine.

大陸轉譯醫學研究主要 Supporting Systems, 含 Drug discovery and development, Biomarkers, Cohort study and biobanks, Molecular imaging, System biomedicine facilities, National networks of bioinformatics, Modernization of TCM 及 Think tank of health policies.

(2)急性前骨髓細胞白血病：A case study for translational medicine from science to health policies.

All-Tans Retinoic Acid (ATRA)：Differentiation therapy from hypothesis to practice 顯示於附件十；而治療機制如附件十一。

(3)本專題演講總結：

a. Translational medicine must adopt patient-centered and health

promotion-oriented double sense Bench to Bedside approach.

- b. Scientific research results must be translated ultimately into cost-effective prevention measures or diagnosis/treatment tools for clinical medicine and public health.
- c. Translational medicine must facilitate the achievements of research to be translated into evidence-based policy making for sustainable use of these achievements as public goods.

3.香港大學 Prof. Kwok-Yung Yuen 主講”Emerging Microbial Agents in Human and Animal in Hong Kong and Southern China”.

重點結論節錄：

Biosecurity/Regulatory measures not catching up with rocketing food/drug productions after the opening of China in 1978，顯示於附件十二。闡述來自食物、性別及人口成長，造成短程及長程的問題。例如香港爆發 Scarlet Fever in 2011 顯示於附件十三，共發生 900 以上案例，自 1 月至 6 月快速上升，而 2010 年以前盛行率卻<50 例。

4.美國 University of Massachusetts Dr. Dengfeng Cheng 主講”Application of Micro-SPECT/CT on Tumor and Infection Imaging”.

重點結論節錄：

最近早期腫瘤造影以 Tc-99m-Glucarate/SPECT 取代 F-18-FDG/PET，效果頗佳，其結構顯示於附件十四，主要用於大腸直腸癌、胰臟癌....等早期診斷。

5.大陸分子影像主管部門王剛副主委報告”Molecular Imaging in Biology and Medicine in China”，附件十五為大陸臨床藥理研究中心統計亞洲藥物近十年累積市場，其中日本為 550 億美金，大陸 200 億美金，台灣 25 億美金(第五位)。

6.本人代表台灣核能研究所發表口頭論文一篇，題目為”New Trends in the

Developments of Radiopharmaceuticals for Imaging Hypoxia and Neuropsychiatric Diseases in Taiwan”摘要如附件十六。另發表 poster 一篇，顯示於附件十七。

7. 美國 Stanford Uni. Dr. Zhen Cheng 主講”Cerenkov Luminescence Imaging(CLI) : A Powerful new Molecular Imaging Technique for Preclinical and Clinical Research”.

重點結論節錄：

- (1)Optical Imaging of Radionuclides 使用主要放射同位素為 Y-90、F-18、I-131、Cu-64、Lu-177、In-111 及 Tc-99m。
- (2)These studies should prove that radioactive tracers for optical imaging is a generalizable technique.
- (3)CLI provides a new molecular imaging strategy and will likely have significant potential for both small animal and clinical imaging.
- (4)The study bridges the optical and nuclear imaging.

- 8.台北榮總 Dr. 劉仁賢主講”Biomarker-based Molecular Imaging for Tumor Profiling and Therapy Monitoring”.

9. 北京大學 Dr. Fan Wang 主講”Targeted Therapy of Tumors with Radiolabeled Probes”.

重點結論節錄：

- (1)硼中子捕獲治療(Boron Neutron Capture Therapy)使用含硼化合物 BPA，並用 F-18-FBPA-Fr 為 probe，如附件十八所示。
- (2)Compared to Y-90-DOTA-RGD4(Arg-Gly-Asp), the low accumulation of Y-90-DOTA-3PRGD2 in normal organs led to lower toxicity and higher MTD, which would make it more suitable for high dose or multiple-dose-regimens, in order to achieve maximum therapeutic efficacy.

(3)RIT with radiolabeled MoAb is an exciting approach for the management of tumor that are resistant to immunotherapeutics.

(4)Combining I-131-EGF(Epidermal Growth Factor) radionuclide therapy with tyrosine kinase inhibitor gefitinib is a promising strategy for targeted therapy of EGFR-positive tumors especially for gefitinib resistant tumors.

10.美國 NIH Dr. Xiaoyuan (Shawn) Chen 主講”Theranostic Nanomedicine”.

重點結論節錄：

(1)Theranostic Nanomedicine 由 Nanotechnology, Imaging 及 Therapy 所組成。

(2)Magnetic Nano-particles 主要應用於 MRI, Cell labeling, Activatable probes, Multimodal imaging, Drug delivery 及 Gene delivery, 詳如附件十九所示。

(3)Iron oxide nanoparticles can be made with accurate sizes, shapes, compositions, magnetizations, relaxivities and surface charges.

(4)Biocompatible IONPs can be harnessed to adjust the toxicity and stability and further, to load functionalities, via various mechanisms, onto the nanoparticle surfaces, enabling simultaneous targeting, imaging and therapy.

(5)While multiple loading may no longer be a challenge, a more critical issue now confronting us is how to leverage the capabilities and to translate them into practices.

11.廣州中山大學 Dr. Ganghua Tang 主講”Apoptosis Imaging and Multi-target Molecular Imaging”.

未來展望如後：

(1)Coupling small molecule multi-target molecular imaging (MMI).

(2)MMI for apoptosis imaging.

(3)Multi-targeted monomolecular imaging.

(4)MMI for drug development.

12.參觀廣州軍區廣州總醫院 PET/CT 中心，拜訪尹吉林主任，該中心擁有 1 部 Baby cyclotron, 2 台 PET/CT，每天造影人數為 35~40 人，並擁有 4 座鉛室，內裝自動合成系統，另 2 座正按裝中，目前研發 C-11-蟻酸用於氣塞診斷，另向 GE 購自動合成系統，生產 F-18-FLT 用於肝纖維化/硬化之造影診斷。

13. 上海 Glaxo Smith Kline, R&D China Dr. Bai Lu (魯白)主講”Activity-dependent Regulation of BDNF : A Journey from Basic Science to Translational Research and Drug Development

重點結論節錄：

(1)大陸自 1994 到 2008，Neuroscience 發表及藥物許可統計 Original paper 由 759 篇成長到 4743 篇，藥物許可 1997 年最高為 17 件，而 2008 年為 6 件，顯示藥物上市審查趨嚴格。

(2)BDNF is a secretory neurotrophic factor critical for synaptic plasticity and cognitive functions. 顯示於附件廿。

(3)Deficits in activity-dependent cellular processes of BDNF may contribute to pathogenesis and etiology, of many nervous system disorders including Alzheimer’s Disease (AD), Huntington’s Disease (HD) and Depression.

14.Huffington Center on Aging, Baylor College of Medicine U.S.A., Dr. Hui Zheng 主講”Presenilins in Alzheimer’s Disease (AD) : Pathophysiology and Target-based Therapy.

重點結論節錄：

(1)The magnitude of the problem today.

a. 6th leading cause of death in US.

b. Affects over 5 million Americans.

c. Prevalence expected to triple by 2050.

d. In 2011, AD care projected to cost \$ 183 billion.

(2)全世界 AD 患者隨老年化而增加，65 歲以上佔 10%，而 85 歲以上佔 40%。2006 年統計全世界有二千七百萬 AD 患者，預測 2050 年，每 85 人就有 1 人為 AD 患者。以美國為例，2010 年統計五百三十萬 AD 患者，死亡率居第七位，每年投入經費一千七百廿十億美金，更需一千一百萬家庭去照顧 AD 患者，社會成本十分龐大。Time Line for the Onset and Progression of AD 顯示於附件廿一。

(3)The limits of current diagnosis and treatment.

a. Postmortem diagnosis.

b. 5 FDA approved drugs.

c. 6~12 month benefit.

(4)造成 AD 最新研究發現腦內逐漸產生 β -Amyloid plaques 及 Neurofibrillary tangles 有關，發生機制顯示於附件廿二。針對最新造影診斷 β -Amyloid plaques 之 PET Imaging Agents 共四種，包括 GE Healthcare 公司的 F-18-FPIB, Bayer Schering Pharma. 公司的 F-18-AV-1, AstraZeneca 公司的 F-18-AZD 4694 及 Avid-Eli Lilly 公司的 F-18-AV-45，其分子結構顯示於附件廿三，其中 F-18-AV-45 進度最快，並於 2010 年 11 月 Eli Lilly 公司以八億美金併購 Avid Radio-Pharmaceuticals 公司的 F-18-AV-45，商品名為”Amyvid”。在 2011 年 1 月 20 日，美國 FDA 通過有條件的臨床使用。

(5)Amyloid-Plaque Imaging of potential therapy effects in AD 顯示於附件廿四。最佳方法為利用尖端診斷 Prove 達到預防醫學和早期診斷及早治療之目的。

15.美國 Center for Life Science, Beth Israel Deaconess Medical Center, Harvard Medical School, Dr. Kun Ping Lu 主講 ”Pin 1 is 2 new enzyme

pivotal for Protecting against Alzheimer's Disease”.

重點結論節錄：

(1)Alzheimer's Disease (AD) 基本認識。

- a. Incidence : The single largest cause of dementia and the major form of neurodegeneration (~1% at age 60 to nearly 50% by age 90)。
- b. Pathology Hallmarks : tangles, plaques, neuronal loss in subregions.
- c. Tangles : Hyperphosphorylated tau on Ser/Thr-Pro sites.
- d. Plaques : Deposits of Amyloid-beta ($A\beta$) peptides ($A\beta$ 42) overproduced from its precursor protein (APP). Connection between tangles and plaques is still not clear.

(2)Two unique conformations of P-Ser/Thr-Pro Motifs 顯示於附件廿五。

(3)腦中樞 Pin 1 流失引起 Tangles 及 Plaques 產生造成 Neurodegeneration 的 AD 機制顯示於附件廿六。

(4)Protein aggregates 為造成腦中樞 Neurodegeneration 主因，包括巴金森氏症(PD)，阿茲海默氏症(AD)，多發性系統退化症(MSA)...等，其差異性顯示於附件廿七。

16.美國 Dept. of Pharmacology and Cancer Biology, Duke Uni., Durham, Dr. Tso-Pang Yao 主講”Parkin and Protein Deacetylase HDAC 6 in Ubiquitin-dependent mitochondrial quality control”.

重點結論節錄：

Common denominators in neurodegenerative disease 係因 protein aggregates 造成 impaired mitochondria 引起 Parkinson's Disease(PD)-Park 2(parkin), Park 6(PINK 1), Huntington's Disease(HD), ALS 及 Alzheimer's Disease(AD)。而 Mitochondria Quality Control-Repair and Elimination 反應機制顯示於附件廿八。

17.美國 Dept of Neurology, Baylor College of Medicine, Houston, Dr.

Weidong Le 主講 "Biomarker Discovery in Parkinson's Disease".

重點結論節錄：

(1) PET, SPECT Imaging Biomarkers 含

- a. PET, SPECT detect glucose metabolic changes and DA receptors binding and DAT uptake changes in the interested region of brain.
- b. Mostly used probes are F-18-DOPA/PET showing DDC activity, C-11-RTI-32, F-18-CFT/PET, I-123- β -CIT, I-123-FP-CIT, Tc-99m-TRODAT-1/SPECT detecting DAT activity and C-11-DHTBZ/PET for VMAT2 activity.
- c. These detecting methods can be used for early diagnosis of PD。其中 I-123- β -CIT 已在歐洲及美國通過 FDA 上市，而 Tc-99m-TRODAT-1 在台灣通過 DOH 許可上市，並分別在巴西、智利、...等國推動人體臨床試驗，就方便性及實用性而言，TRODAT-1 以 Cold Kit 運送在醫院加發生器產生之 Tc-99m 優於 F-123- β -CIT 限於 I-123 短半衰期，運送困難，使用範圍受限。

(2) PD is not a single entity of movement disorder, it is rather a complex of syndrome affecting not only dopaminergic, but also serotonergic, noradrenergic and cholinergic dysfunction ; some PD may overlap with other neurodegenerative disorders.

(3) Over 10 PD-related genes have been identified ; combinations of all of these known gene mutations may account for about 15% familial PD and 3% sporadic PD ; in addition several SNPs are found to be risk factors for PD ; however the genotype-phenotype relation in most cases is not clear.

(4) Detection of early clinical non-motor symptoms and screen of certain genetic biomarkers may help identify pre-clinical PD patients and high risk population. Validation of molecular imaging and biochemical

markers for their specificity and sensitivity is underway. The biomarker discovery for early diagnosis of PD is a key challenge to help understand the disease process and find the way to curb the disease progression.

18.廣州 GIBH, Chinese Academy of Science, Dr. Duangng Pei 主講 ”Stem Cell Fate and Reprogramming”.

重要結論節錄：

Reprogramming of a somatic cell fate to a pluripotent one by defined factors represents a major breakthrough in life sciences as cell fate can be studied rationally and systematically. 利用 Stem Cell 於人類器官(包括神經元、皮膚、血液、肌肉...等)病變之修補和治療理念示意於附件廿九。

19.美國 St. Jude Children’s Research Hospital, Dr. Robert Webster 主講 ”Influenza, wild birds to human : A One World Problem”.

重要結論節錄：

(1)研究於 2009 年流行的 H1N1 pandemic influenza viruses 及 highly pathogenic H5N1 之傳染途徑。The key unanswered questions include ;

- a. Is highly pathogenic Asian H5N1 being perpetuated in wild aquatic birds and changing the established paradigm.
- b. Will the highly pathogenic Asian H5N1 viruses reassort and acquire high transmissibility.
- c. The need for a global surveillance system for influenza in apparently healthy pigs.

(2)Lessons on severity ;

- a. Overall modest severity : Most severe in young adults (70% cases<30 years).
- b. More severe in : Obese, 5X more likely to be hospitalized. Pregnant, 5% of deaths-1% of Population.

c. Replication deep in lungs, children-shedding for 1.5 weeks.

20. Poster 展示和講解(7 月 27 日全天)

本所 Poster 展示顯示附件三十。獲多位生醫學者專家之興趣和討論。

21. 美國 The Aaron Diamond AIDS Research Center, The Rockefeller Uni. Dr.

David Ho 主講 ”Development of an Humanized Monoclonal Antibody/Ibalizumab, for HIV Prevention”.

重點結論：

美國新藥在 2011 年開始 phase I 人體臨床試驗，2015 年進行 phase 2b。HIV incidence among gay men in select chinese cities (range : 2~13%, mean~6%)。

22. 大陸 School of Life Science, Beijing Institute of Technology, Dr. Haiyan

Xie 主講 ”Cell Labeling and Imaging based on Quantum Dots”.

重點結論：

Fluorescence imaging is always one of the important technologies in cell biology research. Quantum dots (QDs)-based fluorescent bioprobes are of broad application foreground in cell labeling and imaging because of their unique fluorescence properties.

The excellent results were obtained by images of QDs-labeled primary nerve stem cells.

23. 大陸 CAS Key Lab. For Health Informatics, Shenzhen Key Lab. of Cancer

Nanotechnology, Institute of Biomedical and Health Engineering, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen. Dr. Lintao Cai 主講 ”Near-infrared quantum dots and DNase-activatable probes for molecular imaging”.

重點結論：

(1) Nanomedicine 應用示意圖顯示於附件三十二。

(2)Dr. Cai 實驗領域由體內造影到標靶治療，顯示於附件三十三。

24.大陸 Biomedical Engineering Center, School of Chemistry and Chemical Engineering, Sun Yat-Sen Uni., Guangzhou. Dr. Shuai Xintas 主講”Multifunctional nano-platform for tumor-targeted MRI-visible gene and drug delivery”.

重點結論：

(1)為何需要 Drug Delivery ?

a. 藥物水溶性差；>40%化學治療藥物不溶於水。

b. Short plasma half-life in-vivo；Renal excretion & nonspecific

uptake,enzymatic/hydrolytic degradation：Half-life in blood：

Doxorubicine：4.h.

Cisplatin：32 mins.

Taxol：3.h.

5-FU：11 mins.

c. Systemic toxicity：as a result of lack of targeting, limits dosage design.

d. Gemetic drugs (siRNA, DNA)：Nuclease degradation & poor cell uptake.

(2)The multifunctional nanomedicine platform that combines MRI-visibility and tumor-targeted drug on gene delivery function are highly desired.

(3)SPIO labeling is a handy approach for both gene and drug nano-carriers.

APIO existence has little effect on the carrier’s delivery function, while adding imaging function.

(4)Such advanced systems potentially allow an easy combination of cancer diagnosis and therapeutics.

25.大陸 Sun Yat-sen Uni. Caner Center, Guangzhou. Dr. Yi-Xin Zeng 主講”Inherited and Somatic Mutations in NPC Pathogenesis”.

重點結論：

(1)Globally the infection-related cancer cases account for 18.6% of total

cancer cases.

The main infection factors related to cancer, such as 31% human papilloma virus, 29% helicobacter Pylori, 28% hepatitis virus and 12% Epstein-Barr virus.

(2)附件三十四顯示不同年代預防癌症之種類，1976 年的 Liver cancer, 2005 年的 Stomach cancer, 2008 年的 Cervical cancer 到現在的 Epstein-Barr virus (EBV)引起的 Nasopharyngeal carcinoma (NPC). Dr. Zeng 實驗室已發現 Pathogenesis of the three forms of NPC 及 Double selection model for NPC development.

26.參觀中山大學附屬第一醫院核醫學 PET/CT 中心，與唐剛華主任討論大陸核醫發現現況和展望。

重點結論：

(1)中山大學附屬醫院共有六個，並有三個專科醫院(腫瘤、眼科及口腔)，不收 AD 患者，由廣東省神經病研究所處理。

(2)Dr. Tang 實驗室重點工作有二，即 PET 分子 probe 研製應用及 PET 分子影像於新藥篩選平台之建立，利用小分子進行細胞凋亡研究，並朝 Multi-targets imaging 方向，與 UCLA，史丹福大學及田納西醫學中心合作研究。擁有 baby cyclotron 及 PET/CT 各一台，每日 F-18-FDG 造影患者為 8~10 人。目前進行 C-11-SFT 於巴金森氏症造影之研發，另 F-18-蟻酸於前列腺癌，腦瘤及神經膠質瘤之造影診斷。得知本所研發上市之 Tc-99m-TRODAT-1 於巴金森氏症造影效果佳，期望有機會可以用到。

27.美國 The Uni. of Texas, M. D. Anderson Cancer Center, Dr. Mien-Chie Hung 主講 “To Believe or not to believe : membrane receptors in the nucleus”.

重點結論：

(1)The EGFR family plays a pivotal role in regulation cell cycle, apoptosis, angiogenesis and metastasis. EGFR is known to be a cell surface receptor embedded in the cell membrane. Nuclear translocation of EGFR by AKT-dependent phosphorylation enhances BCRP/ABCG2 expression in GEFITINIB-resistant cells.

(2)Proposed INTERNET model of the nuclear transportation of EGFR. Nuclear transport of cell surface receptors is through an integral trafficking from the endoplasmic reticulum to the nuclear envelope transport.

(3)分子影像結構確立尚存瞎子摸象併出非真實狀況的困擾，尚待突破，如附件三十五示顯圖。

28.大陸 Dept of Neurobiology, Southern Medical Uni. Guangzhou, Dr. Gao Tian-Ming 主講 “Schizophrenia Susceptibility Genes and Synaptic Plasticity”.

重點結論：

(1)Schizophrenic patients are impaired in cognitive function, including memory. Neuregulin 1 (NRG1) and its receptor ErbB4 are susceptibility genes of schizophrenia and have been implicated in synaptic plasticity.

(2)NRG1 inhibits long-term potentiation (LTP) by enhancing GABA release from parvalbumin (PV) interneuron at CA1 synapse.

(3)PV interneuron is a major cellular target of NRG1/ErbB4 signaling.

(4)NRG1/ErbB4 signaling is important in the contextual memory of fear conditioning.

29.大陸 Dept of Neurobiology and State Key Lab. Of Medical Neurobiology, Shanghai, Dr. Feng-Yan Sun 主講 “Newborn Striatal Neurons Participate in repair of Neuronal Networks in Adult Brain after Stroke”.

重點結論：

The newborn striatal neurons induced by ischemic injury could differentiate into region-appropriate mature neurons. The results demonstrate by molecular, structural and functional criteria that ischemia-stimulated newborn neurons could differentiate into GABAergic and cholinergic neurons that become functionally integrated into neural networks in the ischemia-injured striatum of the adult rat.

- 30.大陸 Institute of Neuroscience, State Key Lab. Of Neuroscience, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, Shanghai, Dr. Jiawei Zhou 主講 “Modulation of FGF-2 Expression in Astrocytes via Dopamine Receptor Signaling—Potential Implications for the Treatment of Parkinson’s Disease” .

重點結論：

- (1) FGF-2 is predominantly synthesized and secreted by astrocytes in adult brain. The astrocytic FGF-2 expression is also regulated by phosphatidylinositol (PI)-linked D1-like receptor. SKF 83959, a selective PI-linked D1-like receptor agonist, upregulates the levels of FGF-2 protein in striatal astrocyte cultures in classical dopamine D1 and D2 receptor-independent manner.
- (2) Current views on regulation of neuroinflammation in the pathogenesis of PD 顯示於附件三十六。

- 31.加拿大 Center for Research in Neuroscience, McGill Uni., Montreal. Dr. Yong Rao 主講 “Drosophila as a Model to Study Neuronal Connectivity and Parkinson’s Disease”.

重點結論：

- (1) *Drosophila melanogaster* is a powerful genetic model system for understanding evolutionarily conserved mechanisms underlying neural development, function and degeneration.

- (2) nM $A\beta$ peptide, under acute conditions, can potentiate glutamate release from the adult rat brain.
- (3) The modulatory effects of $A\beta$ peptides are specific and mediated via direct interaction with glutamatergic terminals.
- (4) μM $A\beta$ peptide, under chronic conditions, can induce toxicity in rat cortical cultured neurons by increased tau phosphorylation and activation of the associated signaling pathways.
- (5) Memantine protects neurons against $A\beta$ toxicity by attenuating phosphorylation of tau protein and associated intracellular signaling molecules and not via altering conformation or internalization of $A\beta$ peptide.
- (6) Beneficial effects of memantine in AD patients could be attributed, in part, to its ability to protect neurons against $A\beta$ -induced toxicity by decreasing phosphorylation of tau protein.

32. 大陸 Neuropharmacology, School of Pharmaceutical Sciences, Sun Yat-Sen Uni. Guangzhou, Dr Wenhua Zheng 主講 “The Inhibitory Effect of Glutamate on the Survival Promoting Effect and Signaling of IGF-1 in-vitro and in-vivo”.

重點結論：

- (1) Impairing intracellular signalling induced by excess glutamate play important roles in the process of neurodegenerative diseases.
- (2) Glutamate
- a. Glutamate is the major excitatory neurotransmitter in the mammalian brain, responsible for basal excitatory synaptic transmission and many forms of synaptic plasticity such as long-term potentiation

(LTP) and long-term depression (LTD) associated with cognitive processes.

b. Appropriate amount of glutamate is necessary for normal physiological activity, but excessive glutamate over-activating glutamate receptors (NMDA receptor) leading to neuronal death (glutamate excitotoxicity).

(3) Glutamate attenuated IGF-1 prosurvival effect by attenuating the tyrosine phosphorylation of the IGF-1 receptor and the survival pathway (PI3K/Akt) of IGF-1 in cultured hippocampal neurons.

(4) Glutamate attenuates IGF-1 signaling in-vivo and in-vitro, and the effect of glutamate is mediated by NMDA receptor.

(5) MK801 extend the therapeutic window of IGF-1 during focal cerebral ischemia in mice.

(三) 7月30日(六)返台

三、心得

本次公差(100年7月24日至7月30日)赴廣州，係應邀參加美洲華人生物科學學會及廣州中山大學共同主辦之第13屆國際學術研討會，發表口頭專演講及 poster 各一篇，其間與全世界華人學者專家等交換心得並收集國際華人在生物科學之最新研發方向及相關資訊，作為本所發展核醫藥物及分子影像平台之先驅和依據。順道參觀廣州軍醫院及中山大學附屬第一醫院之 PET/CT 中心，討論 PET 核醫藥物大陸現況及未來發展方向，收獲豐富，心得條列如下：

- (一)由於老年人口增加，巴金森氏症(PO)預防醫學和早期診斷愈形重要，目前最新核醫造影技術發展有二方向，其一為歐美推動的 I-123- β -CIT/SPECT，次為台灣核能研究所推動的 Tc-99m-TRODAT-1/SPECT，兩者造影效果不分上下，但就方便性及實用性而言，TRODAT-1 Cold Kit 運送到醫院加發生器產生之 Tc-99m 優於 I-123- β -CIT 限於 I-123 短半衰期，運送困難，使用範圍受限，因此，TRODAT-1 市場潛力遠超過 I-123- β -CIT。大陸各大醫學中心，包括北京、杭州、廣州…等地期望本所研發上市之 TRODAT-1 Kit 能提供大陸醫院使用，目前正按正式管道期在政府兩岸交流核准後，才能獲得突破。
- (二)另阿茲海默氏症(AD)早期診斷亦形重要，到 2050 年預估每 85 人就有 1 人為 AD 患者，社會成本極龐大。針對早期造影診斷 β -Amyloid Plaques 之 PET Imaging Agents 目前最熱門的共四種，包括 GE Healthcare 公司的 F-18-FPIB, Bayer Schering Pharma 公司的 F-18-AV-1, AstraZeneca 公司的 F-18-AZD4694 及 Avid-Eli Lilly 公司的 F-18-AV-45, 以上 4 種核醫藥均進行人體臨床試驗，其中 F-18-AV-45 進度最快，於 2010 年 11 月 Eli Lilly 公司以 8 億美金併購 Avid Radiopharmaceuticals 公司的 F-18-AV-45, 商品名為 “Amyvid”, 在 2011 年 1 月 20 日美國 FDA 通過有條件的臨床使用。為推動全世界 AD 臨床應用，國際在 2010 年成立 Alzheimer’s Disease Neuroimaging

Initiative (ADNI)，並於當年 10 月推動 ADNI 1，參加國家為美、日、澳及台灣(長庚和北榮)，接著推動 ADNI-GO，the grant will extend the follow-up of subjects who were enrolled in ADNI 1 to allow analysis of all the ADNI data that was not able to be done in the initial grant. ADNI 2 will focus on predictors, outcomes and clinical trial design.

(三)本屆美洲華人生物科學國際學術研討會首次將核子醫學之“Molecular Imaging in Biology and Medicine”納入議題，在生醫領域台灣參加單位包括國科會、中研院、國家衛生研究院、台大、陽明、成大...等，陣容十分龐大，但核子醫學領域僅北榮劉仁賢主任及核研所本人受邀，這是一個好的開端。核醫分子影像平台具非侵襲性及高靈敏度與專一性優勢，是尖端生物科學研發的重要工具之一。

(四)生醫領域專家普遍對 Hypoxia 癌病灶之診斷和治療束手無策，由於血液流速及代謝速率漸弱不利化學治療，而 Oxygen Enhancement Ratio (OER) Effect 不利放射治療，詳如附件三十一。而核所正研發新 Hypoxia Agents, 透過體內代謝機制可長期滯留在缺氧癌組織細胞內，利用標幟 F-18, Cu-64, Tc-99m...等造影用放射性同位素或螢光等光學顯影劑，可達到診斷的目的，而標幟 Re-188, Lu-177...等治療用放射性同位素或化療藥物，即可達成治療之目的，此藥物之開發，使癌腫半徑大於 160 μ m 產生缺氧情形之癌病患者有治療之機會。

四、建議事項

- (一)華人在生物科學之研發於世界各地展露頭角，兩岸相關國際會議及在日、韓、美...等國舉行之重要研討會，台灣均不應缺席，除加強國際學術與技術交流與合作外，尤應加強兩岸生技交流，知己知彼，加速國際接軌和能見度。
- (二)論文發表，兩岸尊重對等十分重要，本次核研所專題及 poster 論文均用 Taipei, Taiwan, 而大陸用 Guangzhou, China, 並無問題，實有賴事先跟主辦單位溝通協調，免生爭議。
- (三)大陸透過衛生部全力推動生醫投資，其 125 計畫比 115 投入資源大幅成長，期迎頭趕上歐美和台灣，不可不重視和強化。
- (四)大陸青年學子(碩/博士)出席研討會認真學習，國內研討會似乎常見老面孔，因生醫研討會常利用週六假期，年青研究人員或學生出席率低，知能技術和經驗傳承斷層，國內更應警惕。



National Institute of Biomedical Imaging and Bioengineering

Department of Health and Human Services
National Institutes of Health

January 25, 2011

Dr. Lie Hang Shen
Vice Director, Institute of Nuclear Energy Research
Taoyuan, Taiwan, ROC

Dear Prof. Shen

It is with great pleasure that I extend to you a warm invitation to attend the 13th SCBA International Conference-Molecular Imaging in Biology and Medicine International Symposium in Guangzhou, China (July 25-29, 2011).

The International meeting of the Society of Chinese Bioscientists in America (SCBA) is an international society, with a history of over 25 years, established to achieve scientific excellence, to promulgate leadership in science, to promote the visibility of Chinese and Chinese-American scientists, and to provide an important bridge between oriental and occidental cultures. With the increasing movement of global commerce, economy, and science edging towards a Pacific geocenter, SCBA is in a unique position to make special contributions to the development of worldwide bioscience in the coming decades.

The Molecular Imaging in Biology and Medicine International Symposium is concurrent with the 13th SCBA International meeting to be held at the Baiyun International Convention Center, Guangzhou. This symposium will be co-chaired by Prof. Ganghua Tang (Sun Yat-sen University) and me. We have invited a group of outstanding researchers from North America, mainland China and Taiwan to attend this exciting conference.

As the vice director of the Institute of Nuclear Energy Research (INER), we believe your contribution will be significant for the success of this prestigious symposium. I sincerely invite you to give a 30-min speech on hypoxia imaging.

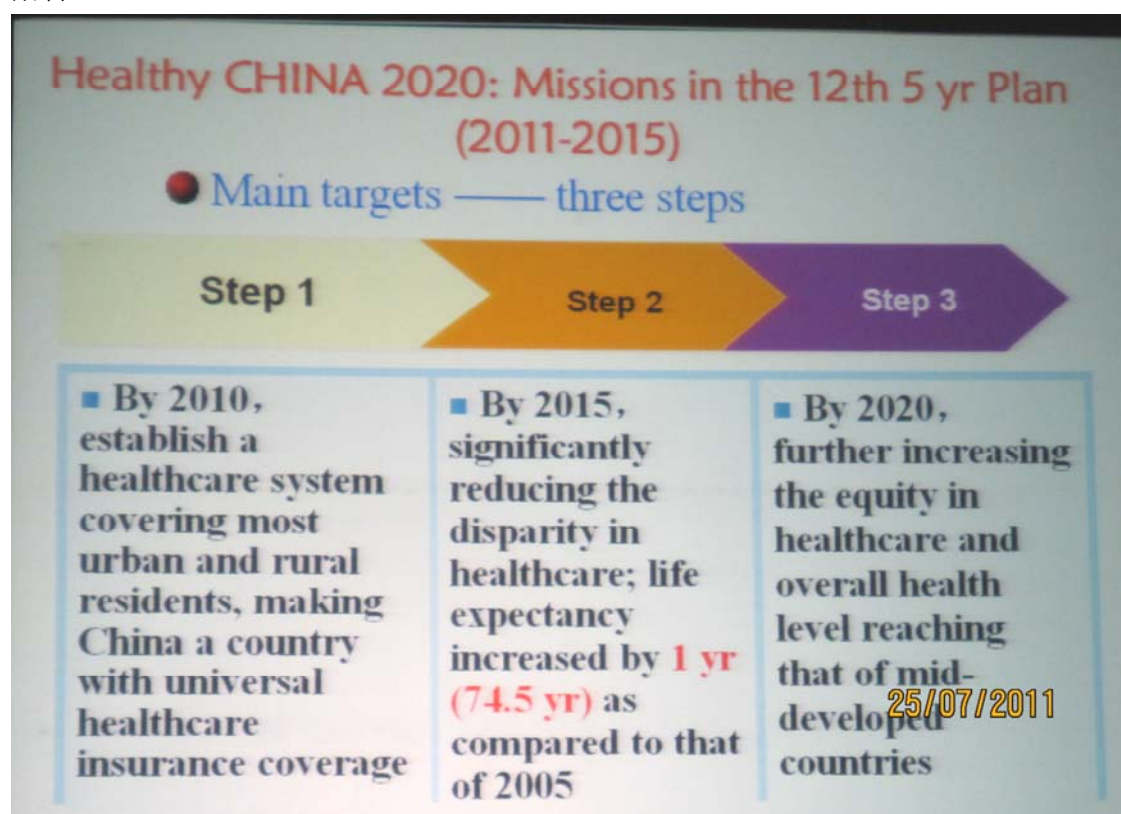
I look forward to meeting and welcoming you in Guangzhou. Please feel free to contact me with your advice and input.

With kind regards,

A handwritten signature in black ink, appearing to read "Shawn Chen", is written over a light blue circular stamp.

Xiaoyuan (Shawn) Chen, Ph.D.
Symposium Chair
Email: shawn.chen@nih.gov

附件二-1



附件二-2

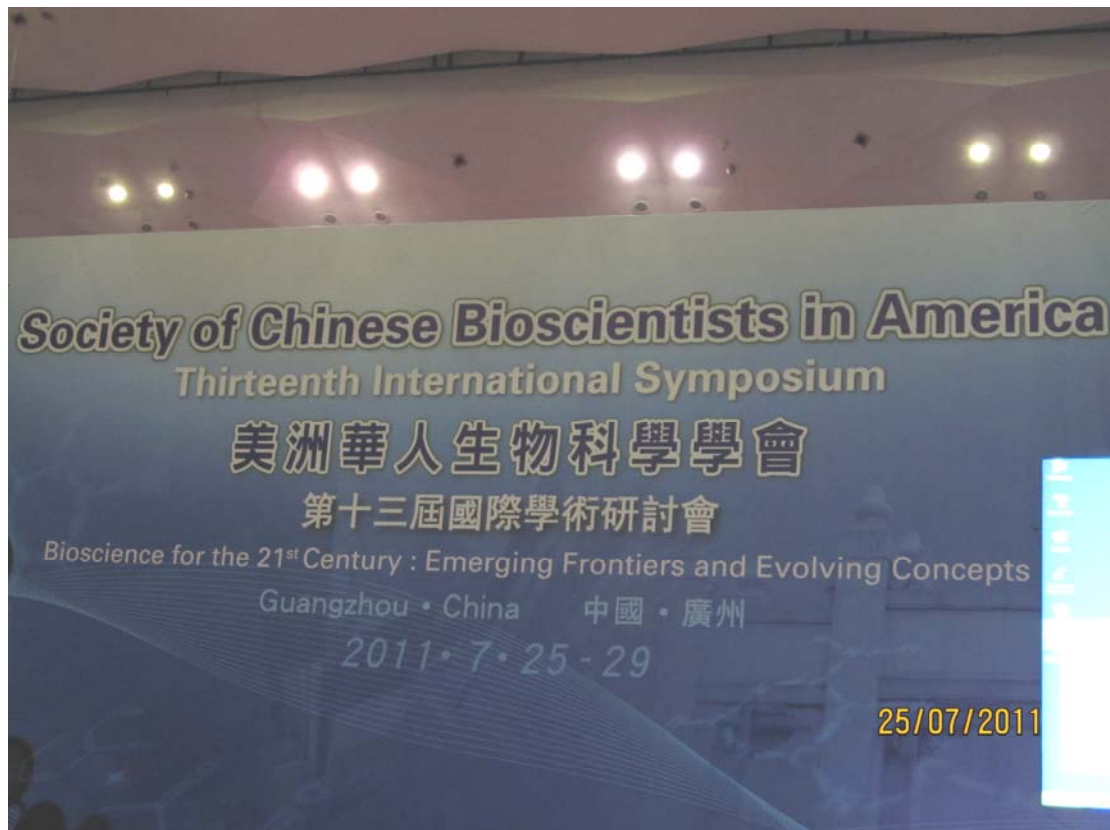
Missions in the 12th 5 yr Plan

Take TM as the core, increase health related S & T level and strengthen capacity building in key disciplines

● “以转化医学为核心，
大力提升医学科技水平，
强化医药卫生重点学科建设。”

—— 摘自《<中共中央关于制定国民经济和社会发展第十二个五年规划的建议>辅导读本》“加快医疗卫生事业改革发展”一文

附件三、大會主會場



附件四、大會議程



2011 SCBA Symposium Schedule

| July 25 th (Monday) | | | |
|--------------------------------|---|---------------------------------|---|
| Time | Program | Session Chair | Location |
| 08:30-09:00 | Plenary, Minister of Health | | Lingnan Grand Hall |
| | ASBMB | | Baiyun Room |
| 09:00-09:30 | Plenary, Shu Chien (UC San Diego) | | Lingnan Grand Hall |
| 09:40-11:40 (Symposium) | 7 NF-kB signaling in health and Diseases | Xin Lin Shao Cong Sun | |
| | 62 Emerging Genome technology and Systems Biology | Yixue Li Jun Zhu | Shenzhen Room |
| | C9 Immune memory and Immunotherapy | Chang You Wu | Shantou Room |
| | 27 Mechanisms of Therapeutic Resistance in Human Cancer | Yun Qiu Zhaoyi Wang | Foshan Room |
| | 41 Induced pluripotent stem cells (iPS cells) and regenerative Medicine | Tao Cheng Yupo Ma | Jiangmen Room |
| | 57 Immunology and innate Signaling | Lie Ping Chen Rongfu Wang | Zhanjiang Room |
| | ASBMB | | Baiyun Room |
| 11:40-13:00 | Lunch (on your own) | | Multi-purpose International Conference Hall |
| 13:00-13:30 | Plenary, KY Yuen (Univ. Hong Kong) | | Lingnan Grand Hall |
| | ASBMB | | Baiyun Room |
| 13:40-15:40 (Symposium) | 66 Nuclear Organization and Chromatin Epigenetics | Curt Davey Li Hoi Yeung | Lingnan Grand Hall |
| | 4 Infection & Inflammatory Diseases | Chen Dong Hong-Bing Shu | Shenzhen Room |
| | 47 Optogenetic neuromodulation: Illuminating neural circuits... | Erik Ho Fong Wong Feng Zhang | Shantou Room |
| | 43 Target Therapy of Cancer | Min-Liang Kuo Han-Chung Wu | Foshan Room |
| | C1 Stem cells biology and regenerative medicine | Guangjin Pan Peng Xiang | Jiangmen Room |
| | 39a Molecular Imaging in Biology | Ganghua Tang | Zhanjiang Room |

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|----------------------------|---|----------------------------------|---|
| | and Medicine | Fan Wang | |
| 15:40-16:00 | ASBMB | | Baiyun Room |
| | Coffee Break | | Outside each Conference Room |
| 16:00-18:00 (Symposium) | 46 Technical advancement and clinical success in gene therapy | Jim Hu Xiao Xiao | Lingnan Grand Hall |
| | 67 Autophagy | Wei Liu Lixin Wei | Shenzhen Room |
| | 48 The Future of Biopharmaceuticals: Challenges... | Haishan Jang Yen Huei Lin | Shantou Room |
| | 65 Cellular and Molecular Basis of Cancer: | Caroline Lee Wanjin Hong | Foshan Room |
| | 29 MicroRNA in Health and Diseases | Steven Y Cheng Cheng Yu Zhang | Jiangmen Room |
| | 39b Molecular Imaging in Biology and Medicine | Xiao Yuan Xiaoyuan Chen | Zhanjiang Room |
| | ASBMB | | Baiyun Room |
| 19:15-21:30 | Opening Banquet (ticket required) | | Multi-purpose International Conference Hall |

| July 26 th (Tuesday) | | | |
|---------------------------------|--|--|--------------------|
| Time | Program | Session Chair | Location |
| 08:30-09:00 | Plenary, Bai Lu (Glaxo-Smith-Kline) | | Lingnan Grand Hall |
| | ASBMB | | Baiyun Room |
| 09:00-09:30 | Plenary, Xuetao Cao (Chinese Academy Medical Science Beijing; Second Military Medical University, Shanghai) | | Lingnan Grand Hall |
| 09:40-11:40 (Symposium) | 53 iPSCs and human neurological disorders | Hongjun Song Guo-li Ming | |
| | C11 Structural biology of Membrane proteins | Yigong Shi | Shenzhen Room |
| | 14 & 13 Biology of Stem Cells | Yanhong Shi Ting Xie Ing-Ming Chiu | Shantou Room |
| | C4 Small RNA and plant stress | Xiao-Ya Chen | Foshan Room |



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|----------------------------|--|--|---|
| | Response | Ji-Rong Huang | |
| | 15 Mitosis & Chromosome Segregation | Wei Dai Hongtao Yu | Jiangmen Room |
| | 45 DNA damage response and cancer | Binghui Shen Zhiyuan Shen | Zhanjiang Room |
| | ASBMB | | Baiyun Room |
| 11:40-13:00 | Lunch (on your own) | | Multi-purpose International Conference Hall |
| 13:00-13:30 | Plenary, Davor Solter (IMB, Singapore) | | Lingnan Grand Hall |
| | ASBMB | | Baiyun Room |
| 13:40-15:40 (Symposium) | 68 Epigenetic Inheritance:DNA and Histone Methylation | Jiemin Wong Ruiming Xu | Lingnan Grand Hall |
| | 50 ABC transporters in cancer and inflammation | Victor Ling Jian-Ting Zhang | Shenzhen Room |
| | 74 & 13 Stem Cells and Tissue Regeneration | Yi Sun Qi Zhou Ya-Hui Chi | Shantou Room Shantou Room |
| | 70 Fate regulation and multipotency of germline cells | Lixin Feng Wai-Yee Chan | Foshan Room |
| | C8 Cancer cell biology | Yuxin Yin Qimin Zhan | Jiangmen Room |
| | 35 Chromosome Stability & Dynamics | Shu-Chun Teng Ting-Fang Wang | Zhanjiang Room |
| 15:40-16:00 | ASBMB | | Baiyun Room |
| | Coffee Break | | Outside each Conference Room |
| 16:00-18:00 (Symposium) | 24 & 25 Human Genetic Diseases, Concepts and Advances & Genomic Medicine on Human Diseases | Chris Lau Pau Tam Wai-Yee Chan Rossa Chiu | Lingnan Grand Hall |
| | 22 Epigenetics and Cancer | Keji Zhao Ying E Zhang | Shenzhen Room |
| | 11 Ion channels: the targets of neuroprotection and regeneration | Dayue Darrel Duan Zhong-Ping Feng | Shantou Room |
| | 34 Functions of Topoisomerase in Chromosome Mechanics | Taoshih Hsieh Tsai-Kun Li | Foshan Room |
| | 36 Recent advances in prostate cancer: From bench side to Bedside | Benyi Li Ming-Fong Lin | Jiangmen Room |



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|--------------|---|--------------------------|----------------|
| | 44 Mechanisms and Therapy of Age-related Neurodegenerative Diseases | Wei Dong Le Hui Zheng | Zhanjiang Room |
| | ASBMB | | Baiyun Room |
| 19: 15-21:30 | Invited Speakers Appreciation Dinner (Only available for plenary and session speakers) Dinner (Seafood) (Optional) | | Qinghe Hall |
| | | | |

| July 27 th (Wednesday) | | | |
|-----------------------------------|---|---|---|
| Time | Program | Session Chair | Location |
| 08:30-09:00 | Plenary, Duanqing Pei (GIBH, Chinese Academy of Science) | | Lingnan Grand Hall |
| 09:00-09:30 | Plenary, Robert Webster (St. Jude Children Res. Hospital) | | |
| 09:40-11:40 (Symposium) | 8 Genetic and Epigenetic regulation of genome-maintenance systems | Guo-Min Li Junjie Chen | |
| | 56 The roles of microRNAs in cancer development and angiogenesis | Burton B Yang Chun Peng | Shenzhen Room Shenzhen Room |
| | C2 Protein science | Fuchu He Zihe Rao | Shantou Room |
| | 31 Recent development in Infectious Diseases | Li-Min Huang Jin-Town Wang | Foshan Room |
| | 26 Tumor Immunology | Hua Yu T.-C. Wu | Jiangmen Room |
| | 18 & 20 Important Fundamental Platforms in Nanobiotechnology and Single Pore for Single Molecule Sensing and other Technologies | Peixuan Guo Chen Wang Jinghong Li | Zhanjiang Room |
| | Poster | | Baiyun Room |
| 11:40-13:00 | Lunch (on your own) | | Multi-purpose International Conference Hall |



| | | | |
|----------------------------|---|---|------------------------------|
| 13:00-13:30 (Plenary) | Plenary, David Ho (Aaron Diamond AIDS Institute) (The Tsai-Fan Yu Legacy Lecture) | | Lingnan Grand Hall |
| | Poster | | Baiyun Room |
| 13:40-15:40 (Symposium) | 71 Nanotechnology-based cell Imaging | Dai-Wen Pang | Lingnan Grand Hall |
| | 49 Reprogramming and iPS cells: From biology to regenerative Medicine | Qi Zhou Linzhaoh Cheng | Shenzhen Room |
| | C6 Plant growth and development | Jiayang Li Weicai Yang | Shantou Room |
| | 40 Immunology of pathogens and infectious diseases | Yuntao Wu Wanjuan Chen | Foshan Room |
| | 9 Novel Neurobiological phenotype for brain-derived neurotrophic factor (BDNF) | Samuel H.H. Chan | Jiangmen Room |
| | 18 & 20 Important Fundamental Platforms in Nanobiotechnology and Single Pore for Single Molecule Sensing and other Technologies | Peixuan Guo Chen Wang Jinghong Li | Zhanjiang Room |
| 15:40-16:00 | Coffee Break | | Outside each Conference Room |
| 16:00-18:00 (Symposium) | Editors/Publishers Session (with representatives from <i>Biomed Central</i> , <i>Cell</i> , the <i>JBC</i> , <i>Nature</i> , <i>Science</i> , and <i>ISI Thomson-Reuters</i>) | | Lingnan Grand Hall |
| | 73 From Zygote to Stem Cell: the Mystery about Pluripotency | Xin-Yuan Fu Huck Hui Ng | Shenzhen Room |
| | 63 Drug Development and Companion Diagnostics for Personalized Medicine | Richard Y. Zhao Yi-fan Zhai | Shantou Room |
| | 60 Infectious diseases and virology | Dong-Yan Jin Kwok-Yung Yuen | Foshan Room |
| | 32 Therapeutic approach to neurodegenerative diseases | Nae J. Dun Zhong Ming Qian | Jiangmen Room |
| | 19 The emerging field of RNA Nanotechnology and RNA Therapeutics | Makram Suidan Peixuan Guo | Zhanjiang Room |

| | | | |
|--|--|--|-------------|
| | Poster | | Baiyun Room |
| | The Pearl River Night Cruise + buffet (Optional) | | |

| July 28 th (Thursday) | | | |
|----------------------------------|--|-------------------------------|---|
| Time | Program | Session Chair | Location |
| 08:30-09:00 | Plenary, Yixin Zeng (Sun Yat-sen Univ. Cancer Center) | | Lingnan Grand Hall |
| 09:00-09:30 | Plenary, Michael Karin (UC San Diego) | | |
| 09:40-11:40 (Symposium) | 17 New Frontier in Cancer Metastasis | Dihua Yu Yibin Kang | Shenzhen Room |
| | 37 Novel Structural Approaches to Complex Assemblies | Wah Chiu Hong Zhou | |
| | 2 Diabetes, Obesity & Energy Metabolism | Li-Na Wei Ming-Jer Tsai | Shantou Room |
| | 5 Inflammation, Virology, and Cancer | Mien-Chie Hung Yun Yen | Foshan Room |
| | 69 TGF-beta Signaling and Diseases | Xin-Hua Feng Ye-Guang Chen | Jiangmen Room |
| | 33 Viruses and human cancer | Zhi-Ming Zheng Jianming Hu | Zhanjiang Room |
| | 23 The role of gut and pancreatic hormones in insulin resistance and diabetes treatment | Jianmin Weng Tianru Jin | Baiyun Room |
| 11:40-12:50 | Lunch (on your own) | | Multi-purpose International Conference Hall |
| 12:50-13:30 | Plenary, SCBA Presidential Award Lecture (10 minute business meeting before lecture) Mien-Chie Hung (MD Anderson Cancer Center) | | Lingnan Grand Hall |
| 13:30-14:00 | Plenary, SCBA Young Investigator Award Lecture Yingzi Yang (NHGRI, NIH) | | |
| 14:10-16:10 (Symposium) | Open | | Shenzhen Room |
| | 38 Structure Biology of Molecular Machines | Wah Chiu Xinhua Ji | |



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|----------------------------|---|----------------------------------|------------------------------|
| | 28 Regeneration, Metabolism, Tumor Formation, Liver Takes the Lead | Bin Gao Yingzi Yang | Shantou Room |
| | 10 HIV & AIDS | Shibo Jiang Linqi Zhang | Foshan Room |
| | 54 Liver Injury and Cancer Stem Cells | Bangyan Stiles | Jiangmen Room |
| | 55 Protein trafficking and signal transduction in neuronal function and morphogenesis | Jun Xia Nancy IP | Zhanjiang Room |
| | 21 Developmental Signaling in Cancer | Kuoxin Luo Ying E Zhang | Baiyun Room |
| | Tea Break | | Outside each Conference Room |
| 16:15-18:15 (Symposium) | Open | | Lingnan Grand Hall |
| | 52 Leukemia stem cells and novel treatments | Paul Liu Ruibao Ren | Shenzhen Room |
| | 3 Mechanism of vascular and heart development and disease | Ching-Pin Chang Sophia Tsai | Shantou Room |
| | 30 Important global infectious diseases | Li-Min Huang Laila Montaser | Foshan Room |
| | 61 Alcohol, Viral Hepatitis, and Liver Cancer: New Challenges | Bin Gao Ruth Aiwu He | Jiangmen Room |
| | C5 Metabolic and endocrine Diseases | Jianping Weng YouFei Guan | Zhanjiang Room |
| | C7 Tropical diseases: basic research and control | Xiao-Guang Chen Zhao-Rong Lun | Baiyun Room |
| | Dinner (Special buffet, with an exotic view of white Tiger life)(Optional) | | |
| | Bar (Optional) | | |

| July 29 th (Friday) | | | |
|--------------------------------|---|---------------|---|
| Time | Program | Session Chair | Location |
| 08:00-08:30 | Continental breakfast | | Multi-purpose International Conference Hall |
| 08:30-10:30 (Symposium) | 72 Mental Disorders: from bench to bedside. | Lin Mei | Shenzhen Room |
| | 64 Genetics and Reproduction | Eu Leong Yong | Shantou Room |



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|----------------------------|---|-------------------------------------|---|
| | | Samuel S.Chong | |
| | 6 Experimental Therapeutics and Biomarkers | Mien-Chie Hung Yun Yen | Foshan Room |
| | 51 Zebrafish as a model to study human disease and to develop novel therapies | Paul Liu Shuo Lin | Jiangmen Room |
| | 59 Molecular mechanism of innate immunity | Dong-Yan Jin Kwok-Yung Yuen | Zhanjiang Room |
| | 42 Challenge, chance, and charge for the development of a mass-immunization regimen against avian influenza | De-chu C.Tang Robert G.Webster | Baiyun Room |
| 10:40-12:40 (Symposium) | C10 Neuroscience | Ju Gong Wen Hua Zheng | Shenzhen Room |
| | 1 Novel Phosphorylation Signaling | Kun Ping Lu Yih-Cherng Liou | Shantou Room |
| | C3 Personalized medicine and Cancer | Chaonan (Miles) Qian Wei Zhang | Foshan Room |
| | 58 Molecular Physiology Studies of Aquabiology | Ching-Fong Chang Pung-Pung Hwang | Jiangmen Room |
| | 12 Breast cancer, stem cells, and metastasis | Chuxia Deng Jianming Xu | Zhanjiang Room |
| | 16 Hormonal regulation of development and diseases | Paul Yen Yun-Bo Shi | Baiyun Room |
| | Lunch on your own End of meeting | | Multi-purpose International Conference Hall |



Monday July 25th, 2011

Morning schedule

Plenary Sessions (Lingnan Grand Hall) 08:30-09:30

Minister of Health, China

Prof. Shu Chien, UC San Diego

Concurrent Symposium Sessions 09:40-11:40

7 NF- κ B signaling in health and Diseases (Lingnan Grand Hall)

Chairs: Xin Lin, Shao Cong Sun

Speakers: Zhijian Chen, Lin-Feng Chen, Shao-Cong Sun, Francis Chan, Xin Lin

62 Emerging Genome technology and Systems Biology (Shenzhen Room)

Chairs: Yixue Li, Jun Zhu

Speakers: Tian Xu, Yixue Li, Yuan Gao, Zhong Wang, Weiqun Peng

C9 Immune memory and Immunotherapy (Shantou Room)

Chairs: Chang You Wu

Speakers: Changyou Wu, Liwei Lu, Sidong Xiong, Wenwei Tu, Ling Chen

27 Mechanisms of Therapeutic Resistance in Human Cancer (Foshan Room)

Chairs: Yun Qiu, Zhaoyi Wang

Speakers: David K Ann, Hsing-Jien Kung, Shuyuan Yeh, Zhaoyi Wang, Chawn Chang

41 Induced pluripotent stem cells (iPS cells) and regenerative Medicine (Jiangmen Room)

Chairs: Tao Cheng, Yupu Ma

Speakers: Lei Xiao, Zack Wang, Yupu Ma, Tao Cheng

57 Immunology and innate Signaling (Zhanjiang Room)

Chairs: Lie Ping Chen, Rongfu Wang

Speakers: Biao Zheng, Bing Su, Guangming Zhong, Jingwu Zhang, Leiping Chen,
Rongfu Wang

Afternoon schedule

Plenary Session (Lingnan Grand Hall) 13:00-13:30

Prof. Kwok Yung Yuen, University of Hong Kong

Concurrent Symposium Sessions 13:40-15:40



66 Nuclear Organization and Chromatin Epigenetics (Lingnan Grand Hall)

Chairs: Curt Davey, Li Hoi Yeung

Speakers: Curtis A. Davey, Lei Lu, Li Hoi Yeung, Li-Feng Zhang

4 Infection & Inflammatory Diseases (Shenzhen Room)

Chairs: Chen Dong, Hong-Bing Shu

Speakers: Genhong Cheng, YongJun Liu, Youhai Chen, Yuncai Liu, Chen Dong, Reen Wu

47 Optogenetic neuromodulation: Illuminating neural circuits... (Shantou Room)

Chairs: Erik Ho Fong Wong, Feng Zhang

Speakers: Edward Callaway, Erik Wong, Feng Zhang, Michael Hausser, J. Henderson

43 Target Therapy of Cancer (Foshan Room)

Chairs: Min-Liang Kuo, Han-Chung Wu

Speakers: Han-Chung Wu, Hsieh Hsing-Pang, Min-Liang Kuo, Yi-Ching Wang

C1 Stem cells biology and regenerative medicine (Jiangmen Room)

Chairs: Guangjin Pan, Peng Xiang

Speakers: Lingsong Li, Shaorong Gao, Ting Xin Jiang, Dewei Zhao

39a Molecular Imaging in Biology and Medicine (Zhanjiang Room)

Chairs: Ganghua Tang, Fan Wang

Speakers: Dengfeng Cheng, Kai Chen, Lie-Hang Shen, Zhen Cheng, Zibo Li

Concurrent Symposium Sessions 16:00-18:00

46 Technical advancement and clinical success in gene therapy (Lingnan Grand Hall)

Chairs: Jim Hu, Xiao Xiao

Speakers: Dexi Liu, Jijing Pang, Jim Hu, Mauro Giacca, Wenlin Huang, Yonghong Wan

67 Autophagy (Shenzhen Room)

Chairs: Wei Liu, Lixin Wei

Speakers: Jianrong Wang, Lixin Wei, Qing Zhong, Shulin Wang, Wei Liu

48 The Future of Biopharmaceuticals: Challenges in Development, Manufacturing, and Commercialization (Shantou Room)

Chairs: Haishan Jang, Yen Hwei Lin

Speakers: Hugh Davis, Lisa Cozza, Zhenhong Li, Herng-Der Chern, Joseph Cho

65 Cellular and Molecular Basis of Cancer (Foshan Room)

Chairs: Caroline Lee, Wanjin Hong

Speakers: Caroline GL Lee, Jie Wu, Mei Wang, Vinay Tergaonkar, Wanjin Hong

29 MicroRNA in Health and Diseases (Jiangmen Room)

Chairs: Steven Y Cheng, Cheng Yu Zhang

Speakers: Cheng-yu-zhang, Da-hai-Zhu, Steven Y Cheng, Xu Song

39b Molecular Imaging in Biology and Medicine (Zhanjiang Room)

Chairs: Xiao Yuan, Xiaoyuan Shawn Chen

Speakers: Ren Shyan Liu, Fan Wang, Ganghua Tang, Qian Feng, Xiaoyuan Shawn Chen



Tuesday July 26th, 2011

Morning schedule

***Plenary Sessions* (Lingnan Grand Hall) 08:30-09:30**

Prof. Bai Lu, Glaxo-Smith-Kline

Prof. Xuetao Cao, Chinese Academy Medical Science Beijing; Second Military Medical University, Shanghai

***Concurrent Symposium Sessions* 09:40-11:40**

53 iPSCs and human neurological disorders (Lingnan Grand Hall)

Chairs: Hongjun Song, Guo-li Ming

Speakers: Fen-Biao Gao, Guoli Ming, Jing Zhao, Qiang Chang

C11 Structural biology of Membrane proteins (Shenzhen Room)

Chairs: Yigong Shi

Speakers: Fei Sun, Hongwei Wang, Youxing Jiang, Maojun Yang

14 & 13 Biology of Stem Cells (Shantou Room)

Chairs: Yanhong Shi, Ting Xie, Ing-Ming Chiu

Speakers: Sheng Ding, Ting Xie, Yanhong Shi, Chengcheng Zhang, Ing-Ming Chiu, Lin-Ju Yen

C4 Small RNA and plant stress Response (Foshan Room)

Chairs: Xiao-Ya Chen, Ji-Rong Huang

Speakers: Jiankang Zhu, Xiao-ya Chen, Xinnian Dong, Xuemei Chen

15 Mitosis & Chromosome Segregation (Jiangmen Room)

Chairs: Wei Dai, Hongtao Yu

Speakers: Wei Dai, Hui Zou, Pumin Zhang, Xuelian Luo, Yong Wan

45 DNA damage response and cancer (Zhanjiang Room)

Chairs: Binghui Shen, Zhiyuan Shen

Speakers: Binghui Shen, Chuanyuan Li, Pengbo Zhou, Yi Sun, Zhiyuan Shen

Afternoon schedule

***Plenary Session* (Lingnan Grand Hall) 13:00-13:30**

Prof. Davor Solter, IMB, Singapore

***Concurrent Symposium Sessions* 13:40-15:40**



68 Epigenetic Inheritance: DNA and Histone Methylation (Lingnan Grand Hall)

Chairs: Jiemin Wong, Rui-ming Xu

Speakers: Bing Zhu, Guoliang Xu, Jiemin Wong, Rui-Ming Xu, Xiaofeng Cao

50 ABC transporters in cancer and inflammation (Shenzhen Room)

Chairs: Victor Ling, Jian-Ting Zhang

Speakers: Victor Ling, Renxue Wang, Geoffrey Chang, Jian-Ting Zhang

74 & 13 Stem Cells and Tissue Regeneration (Shantou Room)

Chairs: Yi Sun, Qi Zhou, Ya-Hui Chi

Speakers: Liangxue Lai, Yufang Shi, Yi Sun, Shaw-Fang Yet, Ya-Hui Chi

70 Fate regulation and multipotency of germline cells (Foshan Room)

Chairs: Lixin Feng, Wai-Yee Chan

Speakers: Cheng-Ming Chuong, Fei Gao, Lixin Feng, Rongwen Xi, Wai-Yee Chan, Jinsong Li

C8 Cancer cell biology (Jiangmen Room)

Chairs: Yuxin Yin, Qimin Zhan

Speakers: Hongbing Zhang, Qimin Zhan, Yuxin Yin, Zhi-xiong Xiao, Qing Wang

35 Chromosome Stability & Dynamics (Zhanjiang Room)

Chairs: Shu-Chun Teng, Ting-Fang Wang

Speakers: Hung Wen Li, Sheau-Yann Shieh, Shu-Chun Teng, Ting-Fang Wang

Concurrent Symposium Sessions 16:00-18:00

24 & 25 Human Genetic Diseases, Concepts and Advances & Genomic Medicine on Human Diseases (Lingnan Grand Hall)

Chairs: Chris Lau, Pau Tam, Wai-Yee Chan, Rossa Chiu

Speakers: Irene Qi-Lin Ng, Paul Tam, Pui-Yan Kwok, Rossa W.K. Chiu, Chris Lau, Pak Sham

22 Epigenetics and Cancer (Shenzhen Room)

Chairs: Keji Zhao, Ying E Zhang

Speakers: Aidong Han, Jianyuan Luo, Jing Huang, Keji Zhao, Suming Huang, Xin Chen

11 Ion channels: the targets of neuroprotection and regeneration (Shantou Room)

Chairs: Dayue Darrel Duan, Zhong-Ping Feng

Speakers: Dayue Duan, Hong Shuo Sun, Zhigang Xiong, Zhongping Feng

34 Functions of Topoisomerase in Chromosome Mechanics (Foshan Room)

Chairs: Tao-shih Hsieh, Tsai-Kun Li

Speakers: Nei-Li Chan, Shao-Win Wang, Tao-shih Hsieh, Tsai-Kun Li

36 Recent advances in prostate cancer: From bench side to Bedside (Jiangmen Room)

Chairs: Benyi Li, Ming-Fong Lin

Speakers: Benyi Li, Ming-Fong Lin, Yaping Tu, Xu Zhang

44 Mechanisms and Therapy of Age-related Neurodegenerative Diseases (Zhanjiang Room)

Chairs: Wei Dong Le, Hui Zheng

Speakers: Hui Zheng, Kun Ping Lu, Tso-Pang Yao, Weidong Le



Wednesday July 27th, 2011

Morning schedule

Plenary Sessions (Lingnan Grand Hall) 08:30-09:30

Prof. Duanqing Pei, GIBH, Chinese Academy of Science

Prof. Robert Webster, St. Jude Children Res. Hospital

Concurrent Symposium Sessions 09:40-11:40

8 Genetic and Epigenetic regulation of genome-maintenance systems (Lingnan Grand Hall)

Chairs: Guo-Min Li, Junjie Chen

Speakers: Guo-Min Li, Hongtao Yu, Junjie Chen, Lee Zou, Li-Lin Du

56 The roles of microRNAs in cancer development and angiogenesis (Shenzhen Room)

Chairs: Burton B Yang, Chun Peng

Speakers: Annie Huang, Burton B Yang, Chun Peng, Er-Wei Song, Yaou Zhang

C2 Protein science (Shantou Room)

Chairs: Fuchu He, Zihe Rao

Speakers: Chung Ching Ming, Fuchu He, Jun Qin, Ming Lei, Zihe Rao

31 Recent development in Asian Infectious Diseases (Foshan Room)

Chairs: Li-Min Huang, Jin-Town Wang

Speakers: Charles Samuel, Cheng-Hsun Chiu, Shie-Liang Hsieh, Joseph Li, Ben Berkhout

26 Tumor Immunology (Jiangmen Room)

Chairs: Hua Yu, T.-C. Wu

Speakers: Shu-Hsia Chen, Yang-Xin Fu, Hua Yu, Weiping Zou

18 & 20 Important Fundamental Platforms in Nanobiotechnology and Single Pore for Single Molecule Sensing and other Technologies (Zhanjiang Room)

Chairs: Peixuan Guo, Chen Wang, Jinghong Li

Speakers: Chen Wang, Peixuan Guo, Baoquan Ding, Haichen Wu, Wei Liang

Poster Session 9:40-11:40 (Baiyun Room) [poster participants --- please put up your poster by 9:00 am]

Afternoon schedule

Plenary Session (Lingnan Grand Hall) 13:00-13:30

Prof. David Ho, Aaron Diamond AIDS Institute



The Tsai-Fan Yu Legacy Lecture

Concurrent Symposium Sessions 13:40-15:40

71 Nanotechnology-based cell Imaging (Lingnan Grand Hall)

Chairs: Dai-Wen Pang

Speakers: Dai-Wen Pang, Haiyan Xie, Lintao Cai, Shuai Xintao

49 Reprogramming and iPS cells: From biology to regenerative Medicine (Shenzhen Room)

Chairs: Qi Zhou, Linzhao Cheng

Speakers: Qi Zhou, Sheng Ding, Kun Zhang, Linzhao Cheng

C6 Plant growth and development (Shantou Room)

Chairs: Jiayang Li, Weicai Yang

Speakers: Chuanyou Li, Hong Ma, Hongquan Yang, Weicai Yang

40 Immunology of pathogens and infectious diseases (Foshan Room)

Chairs: Yuntao Wu, Wanjun Chen

Speakers: Feng Li, Yuntao Wu, Wanjun Chen, Liang Chen, Xunrong Luo

9 Novel neurobiological phenotype for brain-derived neurotrophic factor (BDNF) (Jiangmen Room)

Chairs: Samuel H.H. Chan

Speakers: Alice YW Chang, Julie YH Chan, Po-Wu Gean, Samuel H.H. Chan

18 & 20 Important Fundamental Platforms in Nanobiotechnology and Single Pore for Single Molecule Sensing and other Technologies (Zhanjiang Room)

Chairs: Peixuan Guo, Chen Wang, Jinghong Li

Speakers: Chen Wang, Peixuan Guo, Baoquan Ding, Haichen Wu, Wei Liang

Concurrent Symposium Sessions 16:00-18:00

Editors/Publishers Session (with representatives from *Biomed Central*, *Cell*, the *JBC*, *Nature*, *Science*, and *ISI Thomson-Reuters*) (Lingnan Grand Hall)

73 From Zygote to Stem Cell: the Mystery about Pluripotency (Shenzhen Room)

Chairs: Xin-Yuan Fu, Huck Hui Ng

Speakers: Barbara Knowles, Hui H Ng, Wu Qiang, Xin-Yuan Fu

63 Drug Development and Companion Diagnostics for Personalized Medicine (Shantou Room)

Chairs: Richard Y. Zhao, Yi-fan Zhai

Speakers: Dajun Yang, Richard Zhao, Roberto Trujillo, Shuwei Yang, Wei-wu He

60 Infectious diseases and virology (Foshan Room)

Chairs: Dong-Yan Jin, Kwok-Yung Yuen

Speakers: Michael MC.Lai, Mifang Liang, Patrick CY Woo, Peijer Chen, Xuetao Cao

32 Therapeutic approach to neurodegenerative diseases (Jiangmen Room)

Chairs: Nae J.Dun, Zhong Ming Qian

Speakers: Fudi Wang, Haiyan Zhang, Li Zhu, Ya Ke



19 The emerging field of RNA Nanotechnology and RNA Therapeutics (Zhanjiang Room)
Chairs: Makram Suidan, Peixuan Guo
Speakers: Zhen Huang, Peixuan Guo, Dong Kee Li, Ningsheng Shao, Li Niu, Shoujun Xiao, Chunhai Fan, Hailin Wang

Poster Session 13:00-18:00 (Baiyun Room) [poster participants --- please remove your posters by 18:00 pm]

Thursday July 28th, 2011

Morning schedule

Plenary Sessions (Lingnan Grand Hall) 08:30-09:30

Prof. Yixin Zeng, Sun Yat-sen Univ. Cancer Center

Prof. Michael Karin, UC San Diego

Concurrent Symposium Sessions 09:40-11:40

17 New Frontier in Cancer Metastasis (Lingnan Grand Hall)

Chairs: Dihua Yu, Yibin Kang

Speakers: Cunyu Wang, Hongyang Wang, Li Ma, Qinghua Zhou, Xiao-Fan Wang

37 Novel Structural Approaches to Complex Assemblies (Shenzhen Room)

Chairs: Wah Chiu, Hong Zhou

Speakers: Wen Jiang, Daiwen Yang, J.R. Halpert, Peijun Zhang, Hong Zhou

2 Diabetes, Obesity & Energy Metabolism (Shantou Room)

Chairs: Li-Na Wei, Ming-Jer Tsai

Speakers: Bon-Chu Chung, Chih-Hao Lee, Li-Na Wei, Yu-Hua Tseng, Lawrence Chan

5 Inflammation, Virology, and Cancer (Foshan Room)

Chairs: Mien-Chie Hung, Yun Yen

Speakers: Mien Chie Hung, Xingzhi Xu, Yu-Jui Yvonne Wan, Yun Yen

69 TGF-beta Signaling and Diseases (Jiangmen Room)

Chairs: Xin-Hua Feng, Ye-Guang Chen

Speakers: Peter ten Dijke, Xiao Yang, Xin-Hua Feng, Yan Chen, Ye-Guang Chen

33 Viruses and human cancer (Zhanjiang Room)

Chairs: Zhi-Ming Zheng, Jianming Hu

Speakers: Zhi-Ming Zheng, Jianming Hu, Ke Lan, Yixin Zeng, Paul Chan, Cheng-ming Chiang

23 The role of gut and pancreatic hormones in insulin resistance and diabetes treatment

(Baiyun Room)

Chairs: Jianmin Weng, Tianru Jin

Speakers: Herbert Gaisano, Qinghua Wang, Tianru Jin, Jianmin Weng

Afternoon schedule

***Plenary Session* (Lingnan Grand Hall) 12:50-14:00**

SCBA Presidential Award Lecture (10 minute business meeting before lecture)

Prof. Mien-Chie Hung, MD Anderson Cancer Center

SCBA Young Investigator Award Lecture

Prof. Yingzi Yang, NHGRI, NIH

Concurrent Symposium Sessions 14:10-16:10

38 Structure Biology of Molecular Machines (Shenzhen Room)

Chairs: Wah Chiu, Xinhua Ji

Speakers: Mingjie Zhang, Xiao-Jiang Chen, Xinhua Ji, Wah Chiu

28 Regeneration, Metabolism, Tumor Formation, Liver Takes the Lead (Shantou Room)

Chairs: Bin Gao, Yingzi Yang

Speakers: Bin Gao, Cynthia Ju, Xiaoyong Yang, Yingzi Yang, Zhaoli Sun,

10 HIV & AIDS (Foshan Room)

Chairs: Shibo Jiang, Linqi Zhang

Speakers: Linqi Zhang, Yiming Shao, Qiang Zhou, Johnson Mak, Damian F.J..Purcell,
Shibo Jiang

54 Liver Injury and Cancer Stem Cells (Jiangmen Room)

Chairs: Bangyan Stiles

Speakers: Amy Lee, Bangyan Stiles, Wendong Huang

55 Protein trafficking and signal transduction in neuronal function and morphogenesis

(Zhanjiang Room)

Chairs: Jun Xia, Nancy IP

Speakers: King-Wai Yau, Wanjin Hong, YP Hsueh, Jun Xia

21 Developmental Signaling in Cancer (Baiyun Room)

Chairs: Kuoxin Luo, Ying E Zhang

Speakers: Kunxin Luo, Lan Xu, Xiao-Jing Wang, Ying E Zhang, Hong Wu, C-C Hui

Concurrent Symposium Sessions 16:15-18:15

52 Leukemia stem cells and novel treatments (Shenzhen Room)

Chairs: Paul Liu, Ruibao Ren

Speakers: Linheng Li, Paul Liu, Shaoguang Li, Tao Cheng, Ren Ruibao



3 Mechanism of vascular and heart development and disease (Shantou Room)

Chairs: Ching-Pin Chang, Sophia Tsai

Speakers: Ching-Pin Chang, Rong Wang, Sophia Y. Tsai, Yibin Wang, Yi-Tang Tseng

30 Important global infectious diseases (Foshan Room)

Chairs: Li-Min Huang, Laila Montaser

Speakers: Charles Wood, Jen-Ren Wang, Jin-Town Wang, Ming-Tsan Liu, Pei-Chun Chan

61 Alcohol, Viral Hepatitis, and Liver Cancer: New Challenges (Jiangmen Room)

Chairs: Bin Gao, Ruth Aiwu He

Speakers: Aiwu R. He, Fusheng Wang, Limin Zheng, Ling Qi, Min You, Wenzhe Ho

C5 Metabolic and endocrine Diseases (Zhanjiang Room)

Chairs: Jianping Weng, YouFei Guan

Speakers: Feifan Guo, Jianxing Ma, Julianna CN Chan, Yong Liu

C7 Tropical diseases: basic research and control (Baiyun Room)

Chairs: Xiao-Guang Chen, Zhao-Rong Lun

Speakers: Jianping Chen, Ji-Long Shen, Xiao-Guang Chen, Xingquan Zhu, Yan-Zi Wen, Zhao-Rong Lun, Zhongdao Wu

Friday July 29th, 2011

Morning schedule

Concurrent Symposium Sessions 08:30-10:30

72 Mental Disorders: from bench to bedside (Shenzhen Room)

Chairs: Lin Mei

Speakers: Qiyong Gong, Tian-Ming Gao, Wen-Cheng Xiong, Lin Mei

64 Genetics and Reproduction (Shantou Room)

Chairs: Eu Leong Yong, Samuel S. Chong

Speakers: Eu Leong Yong, Mahesh Choolani, Samuel Chong, Yap-Seng Chong (Soh Shu E)

6 Experimental Therapeutics and Biomarkers (Foshan Room)

Chairs: Mien-Chie Hung, Yun Yen

Speakers: Jia Wei, JY Chang, Kun-Liang Guan, Dihua Yu

51 Zebrafish as a model to study human disease and to develop novel therapies (Jiangmen Room)

Chairs: Paul Liu, Shuo Lin

Speakers: Jim Du, Jinrong Peng, Shuo Lin, Zilong Wen

59 Molecular mechanism of innate immunity (Zhanjiang Room)

Chairs: Dong-Yan Jin, Kwok-Yung Yuen

Speakers: Chen Wang (Yanlian Yang), Gutian Xiao, Feng Shao, Jun Gu, Kong Peng Lam, Xinyuan Fu

42 Challenge, chance, and charge for the development of a mass-immunization regimen against avian influenza (Baiyun Room)

Chairs: De-chu C.Tang, Robert G.Webster

Speakers: Robert G. Webster, Hualan Chen, Haroldo Toro, De-chu C.Tang

Concurrent Symposium Sessions 10:40-12:40

C10 Neuroscience (Shenzhen Room)

Chairs: Gong Ju, Wen Hua Zheng

Speakers: Fengyan Sun, Guoqiang Bi, Jiawei Zhou, Jinggen Liu, Wenhua Zheng, Yong Rao

1 Novel Phosphorylation Signaling (Shantou Room)

Chairs: Kun Ping Lu, Yih-Cherng Liou

Speakers: Eric Tse, Ruey-Hwa Chen, Yang Xu, Yih-Cheng Liou, Zhimin Lu, Kun Ping Lu

C3 Personalized medicine and Cancer (Foshan Room)

Chairs: Chaonan (Miles) Qian, Wei Zhang

Speakers: Chaonan Qian, Jian-Ting Zhang, Peng Huang, Wei Zhang, Feng Chen

58 Molecular Physiology Studies of Aquabiology (Jiangmen Room)

Chairs: Ching-Fong Chang, Pung-Pung Hwang

Speakers: Ching-Fong Chang, Chi-Yang Lee, Jyh-Yih Chen, Pung-Pung Hwang, Choy L. Hew

12 Breast cancer, stem cells, and metastasis (Zhanjiang Room)

Chairs: Chuxia Deng, Jianming Xu

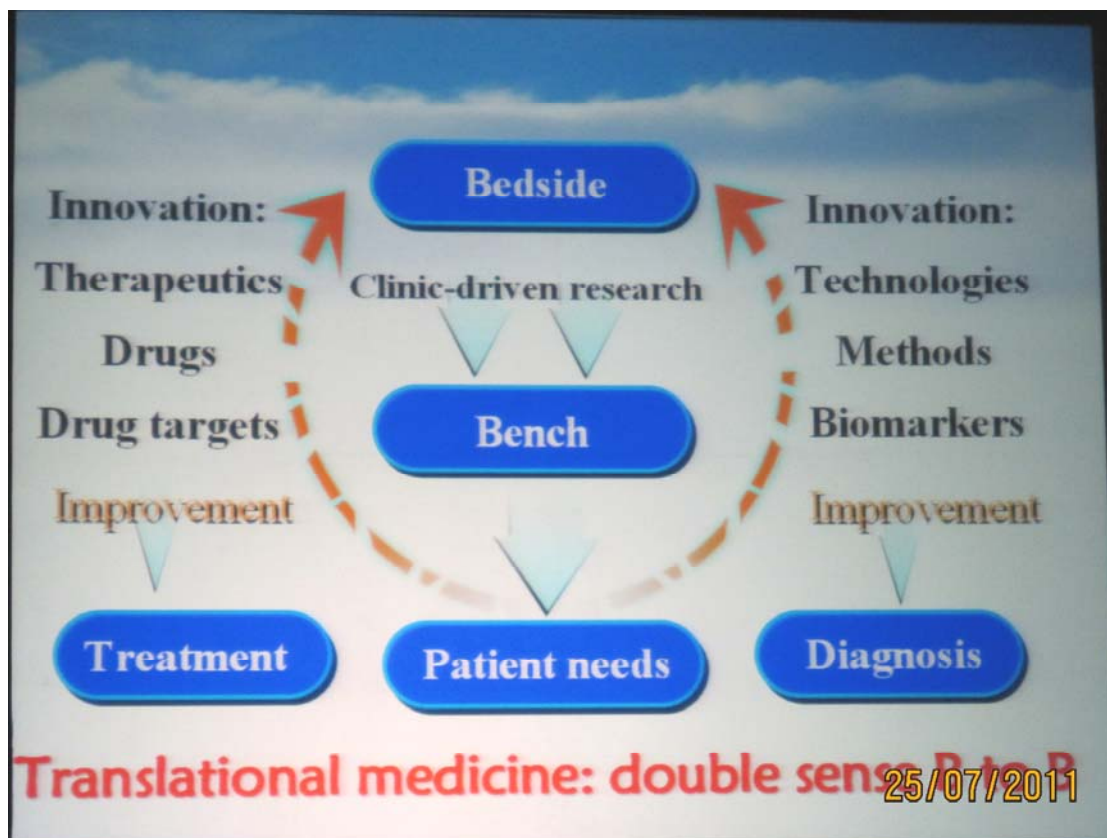
Speakers: Chuxia Deng, Jianming Xu, Qihong Huang, Yi Li, Yibin Kang

16 Hormonal regulation of development and diseases (Baiyun Room)

Chairs: Paul Yen, Yun-Bo Shi

Speakers: Edwin Cheung, Li Wang, Yun Qiu, Yun-Bo Shi, Paul Yen

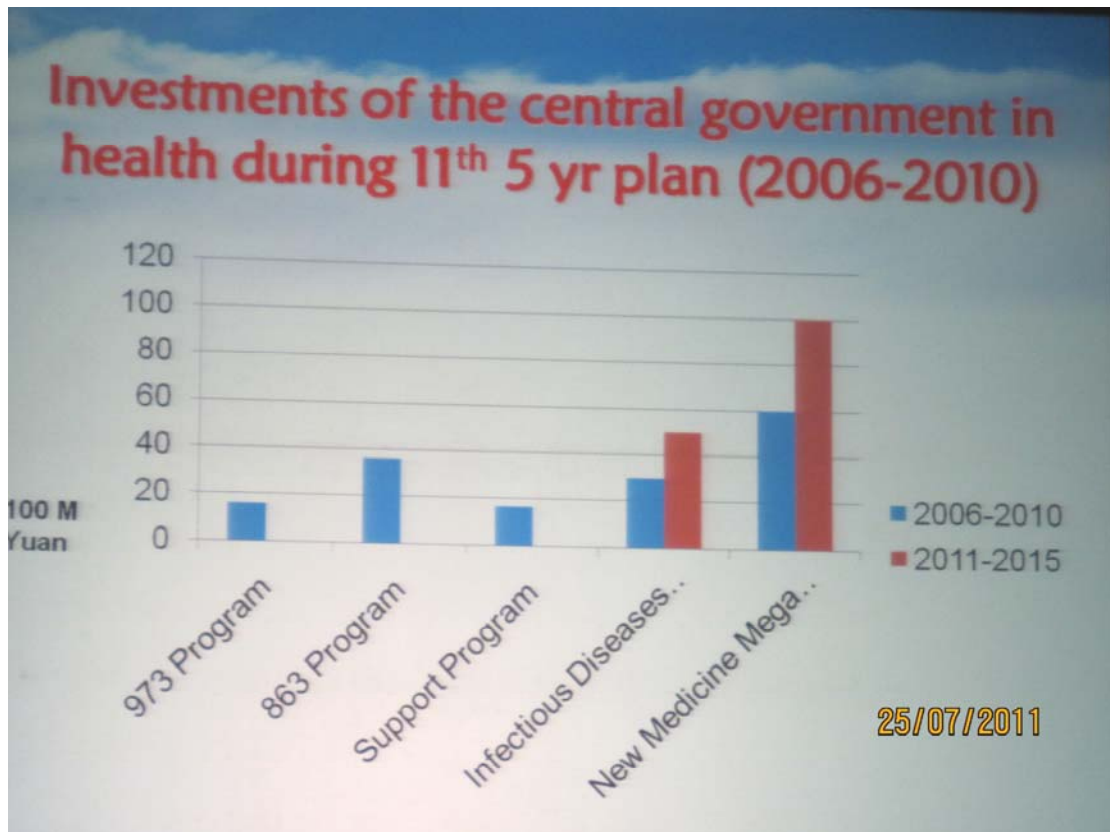
附件五



附件六

- ## Progress of Health Care Reform
- Health insurance system: 1.27 billion (95%) people covered with a reimbursement rate over 70%
 - National essential medicines system: 307 drugs available without commission in over 80% of grassroots level health care institutions
 - Primary healthcare system: refurbishment of 1,877 county hospitals, 5,169 central township health centers, 2,382 community health centers and 11,250 village clinics; training of 2 million professionals
 - Equal access to basic public health services: 9 categories of basic programs (e.g., eHR) implemented and 8 major programs smoothly carried out
 - Pilot reform project launched in 17 cities (including Beijing and Shanghai) and 300 county hospitals. Key issue: the system of "commission on drug sale (supplement the medical service deficit using profit of drug use)"
- 25/07/2011

附件七



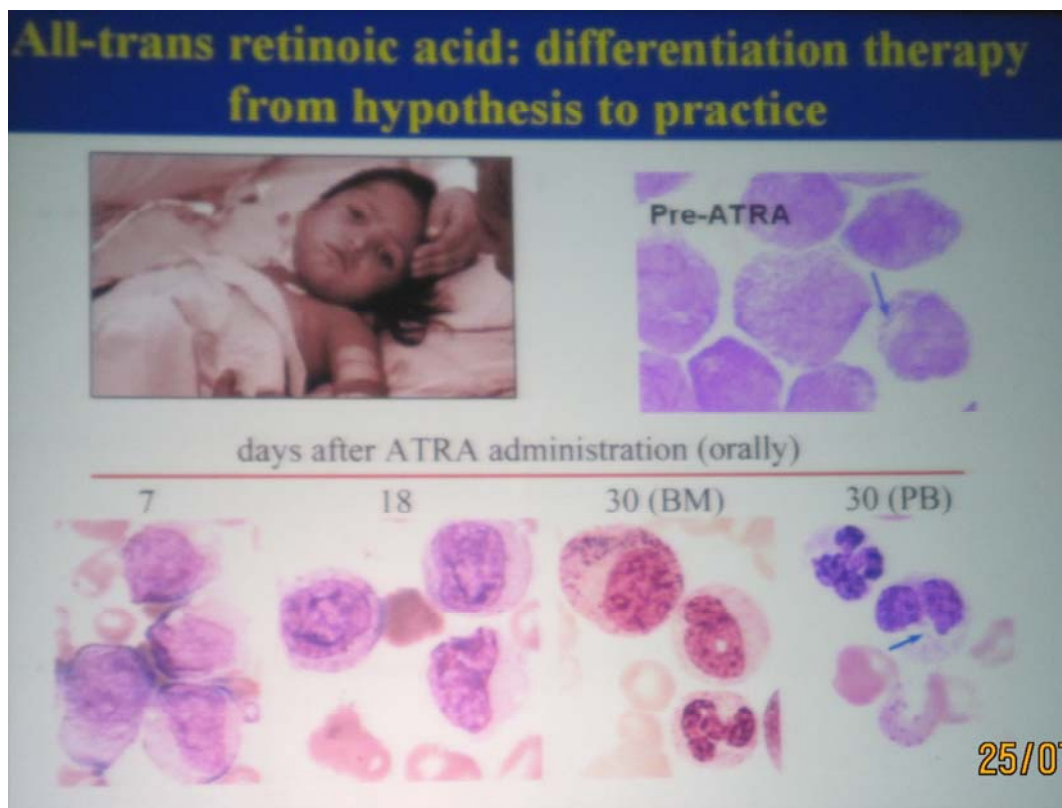
附件八

- ### Establishment of translational medicine centers in China
- Peking Union Medical College
 - Beijing University (Shen Zhen Translational Medicine center)
 - Shanghai Fudan University (Translational medicine center with animal molecular imaging facilities)
 - Xiang Ya Medical School, Zhong Nan University
 - First Hospital affiliated to Zhe Jiang University
 - Harbin Medical University
 - Institute of advanced manufacturing, CAS
 - Shanghai Chang Hai Hospital
 - Shanghai Children's Hospital
 - Shanghai Center for Translational Medicine
- 25/07/2011

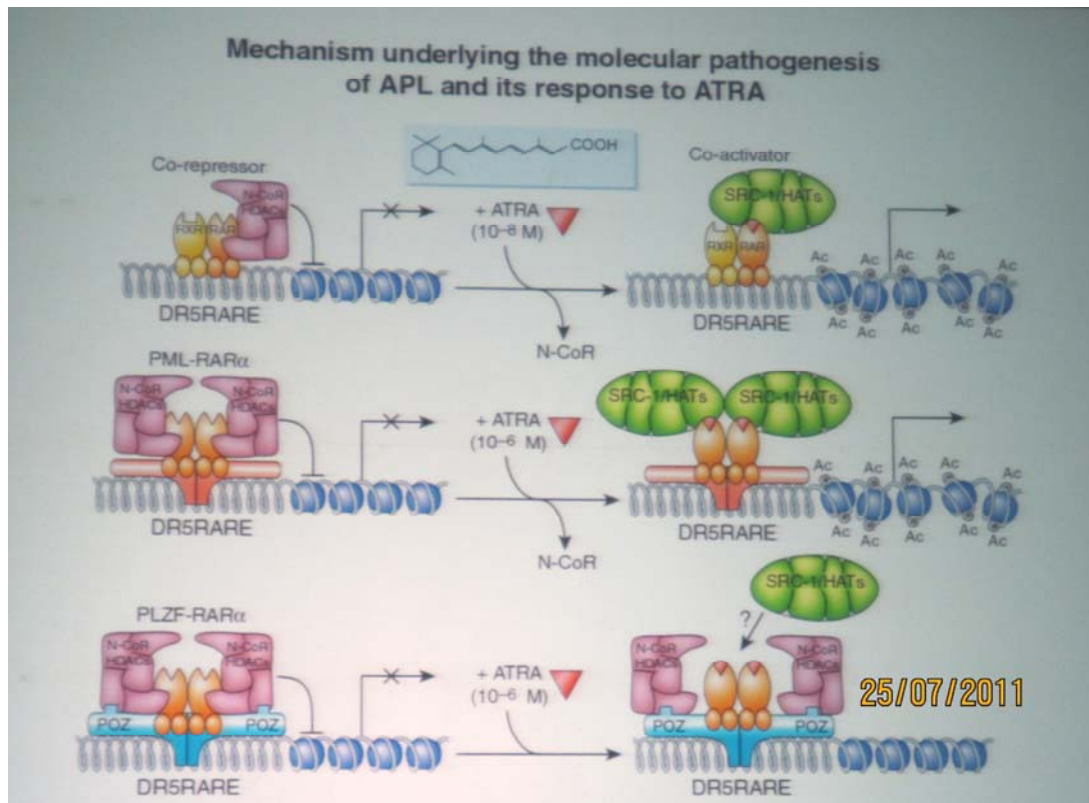
附件九



附件十



附件十一



附件十二

《禮記》

「飲食、男女，人之大欲存焉。」

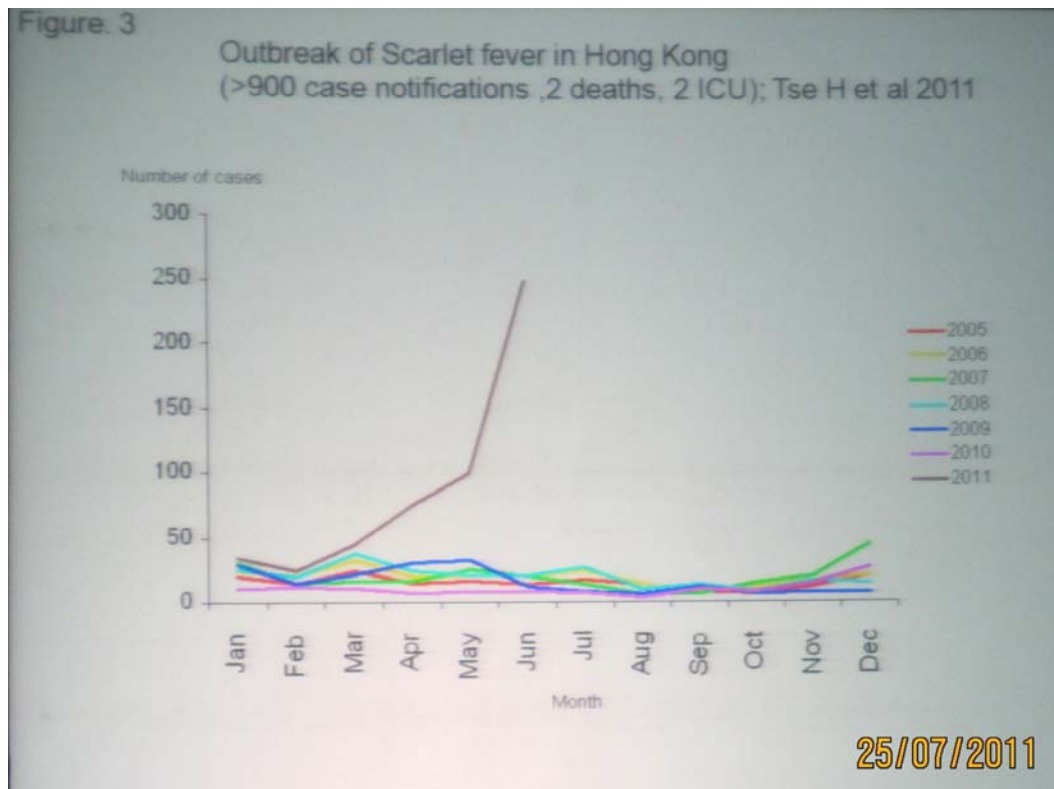
（〈禮運〉）

Biosecurity/Regulatory measures not catching up with rocketing food/drug production after the opening of China in 1978!

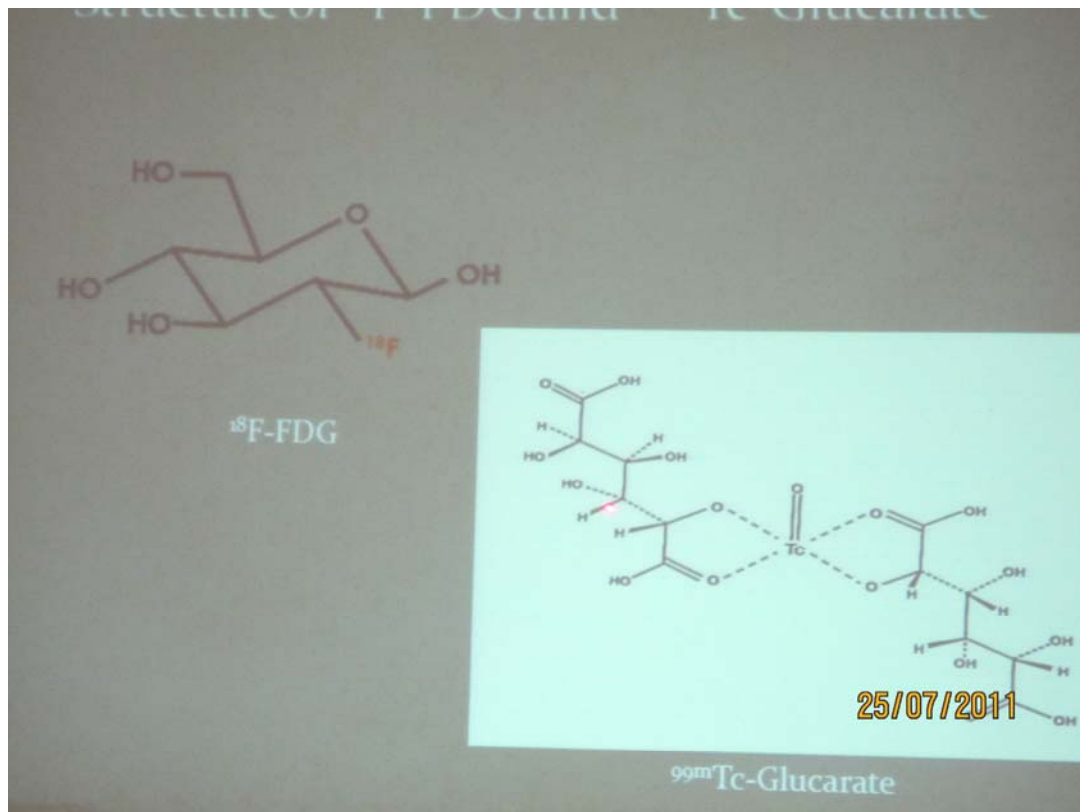
| | Short term | Long term |
|---------------------|---|---|
| • Eating | Emerging ID in (food/wild) animals Tainted Food/Drug* | Malnutrition/ Obesity |
| • Sex | STD/ Abortions | HIV/AIDS/sex selection |
| • Population growth | Large susceptible population enhanced rapid transmission of novel infection | Pollution; shortage of water, food, energy & resource; global warming |

25/07/2011

附件十三



附件十四



附件十五

the OTC market growing to be the largest in the world within ten years.
China's pharmaceutical market as the second largest in Asia.

| <u>Country & area</u> | <u>Pharmaceutical Market Size</u> |
|---------------------------|-----------------------------------|
| China | US \$20 billion |
| Hong Kong | US \$1.5 billion |
| India | US\$8.8 billion |
| Indonesia | US \$350 million |
| Japan | US \$55 billion |
| Malaysia | US \$210 million |
| Philippines | US \$300 million |
| Singapore | US \$400 million |
| South Korea | US \$6.3 billion |
| Taiwan | US \$2.5 billion |
| Thailand | US \$1.5 billion |

Phase I Unit  Clinical Pharmacology Research Center 25/07/2011

S39-3: Lie-Hang Shen

New trends in the Developments of Radiopharmaceuticals for Imaging Hypoxia and Neuropsychiatric Diseases in Taiwan

Shen LH¹, Hsia CC¹, and Tseng YC¹.

¹Institute of Nuclear Energy Research, Taipei, Taiwan

Improving healthcare using nuclear medicine is one of Institute of Nuclear Energy Research (INER) major goals. Increasing demand for radiopharmaceuticals is being driven by the ageing population and the rise of prevalence of age-related diseases such as cancer, Alzheimer's disease, Parkinson's disease, stroke and heart failure. Since neuropsychiatric diseases are becoming major socio-economic burden to modern society and hypoxia plays a significant role in the management of tumor, stroke and heart disease, the projects to develop radiotracers for imaging neuropsychiatric diseases and hypoxia are high priority in Taiwan.

Tissue hypoxia results from an inadequate supply of oxygen (O₂) that compromises biological functions. Evidence from experimental and clinical studies points to a role for tumor hypoxia in

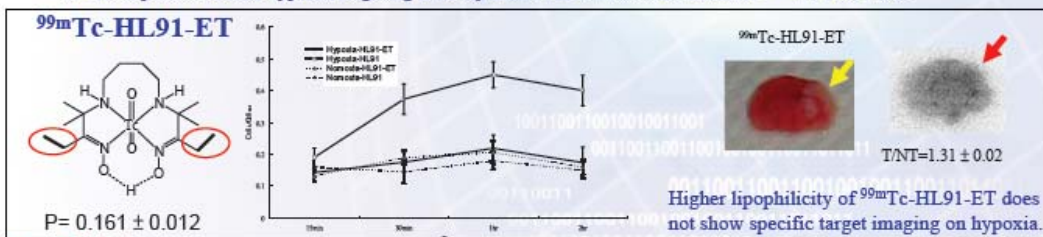
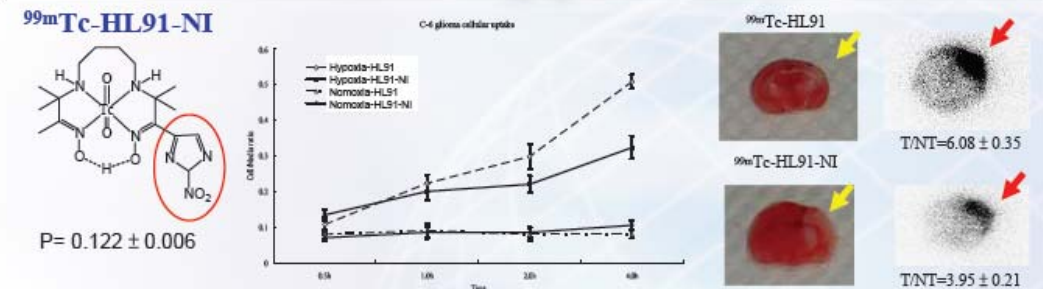
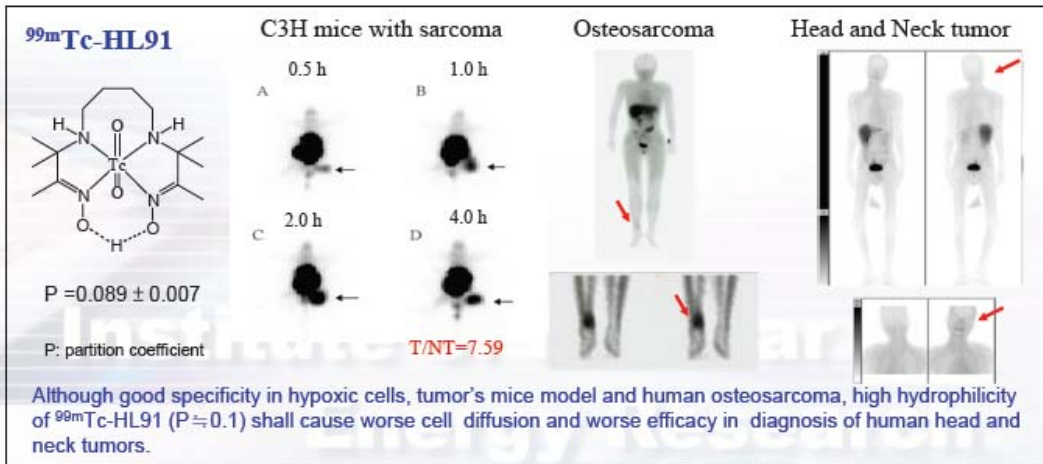
tumor propagation, resistance to therapy and malignant progression. This has led to the development of assays for the detection of hypoxia in patients in order to predict outcome and identify patients with a worse prognosis and/or patients that would benefit from appropriate treatments. A variety of invasive and noninvasive approaches have been developed to measure tumor oxygenation including oxygen-sensitive electrodes and hypoxia marker techniques using various radiotracers that can be detected by PET and SPECT. ^{99m}Tc-BnAO (HL91), the first nonnitro-aryl-based radiotracer, had been used for evaluating hypoxic fraction. In INER, the biological characteristics of ^{99m}Tc-BnAO-derivatives are studied in tumor and stroke bearing mice. Clinical studies present the feasibility of ^{99m}Tc-BnAO on osteosarcoma but not on head and neck tumor hypoxia imaging. The mechanism of ^{99m}Tc-BnAO uptake and the development of new hypoxic tracers are undergoing.

INER researchers have undertaken in the development of numbers of radiopharmaceuticals which will bring scientists one step closer to visualization of the distribution, density, and activity of receptors or transporters in the brain, including quantification of dopamine transporters for detecting loss of functional dopaminergic neuron terminals in the striatum with ^{99m}Tc-TRODAT-1, quantification of dopamine D2 receptors for studies of movement disorders and for assessments of receptor occupancy by neuroleptic drugs with ¹²³I-IBZM and ¹²³I-epidepride, quantification of serotonin transporters in affective disorders with ¹²³I-ADAM, imaging GABA/BZR receptors with ¹⁸F-FMZ and imaging β -amyloid plaques as a marker of cognitive and memory impairments with ¹²³I-IMPY. INER and Taiwan medical centers are collaborating in investigating the brain mechanisms by using these developed radiotracers. More information about these mechanisms could lead to develop the treatment of such disorders.

New Trends in the Developments of Radiopharmaceuticals for Imaging Hypoxia in Taiwan

Lie-Hang Shen, Chien-Chung Hsia, Fu-Lei Huang, Yu-Chin Tseng, Mei-Hsiu Liao
Institute of Nuclear Energy Research, Taipei, Taiwan

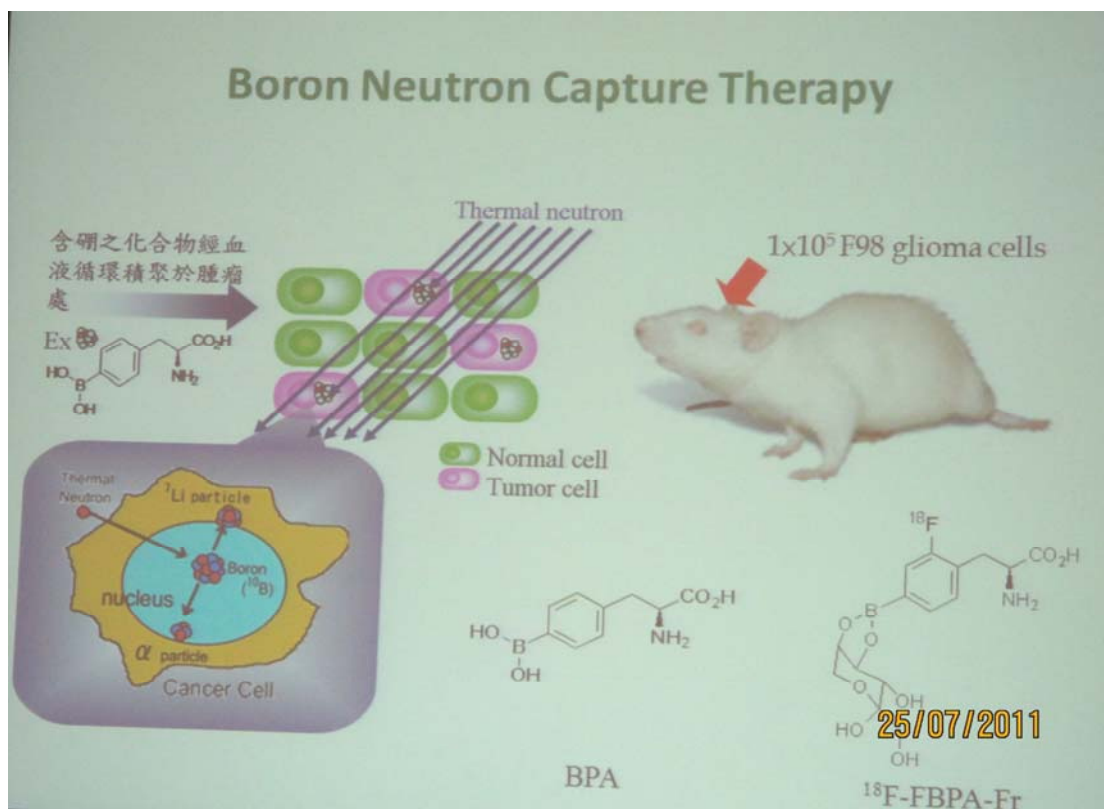
Tissue hypoxia results from an inadequate supply of oxygen (O₂) that compromises biological functions. Evidence from experimental and clinical studies points to a role for tumor hypoxia in tumor propagation, resistance to therapy and malignant progression. This has led to the development of assays for the detection of hypoxia in patients in order to predict outcome and identify patients with a worse prognosis and/or patients that would benefit from appropriate treatments. A variety of invasive and noninvasive approaches have been developed to measure tumor oxygenation including oxygen-sensitive electrodes and hypoxia marker techniques using various radiotracers that can be detected by PET and SPECT. ^{99m}Tc-HL91, the first nonnitro-aryl-based radiotracer, had been used for evaluating hypoxic fraction. In INER, the biological characteristics of ^{99m}Tc-HL91-derivatives are studied in tumor and stroke bearing mice. Clinical studies present the feasibility of ^{99m}Tc-HL91 on osteosarcoma but not on head and neck tumor hypoxia imaging.



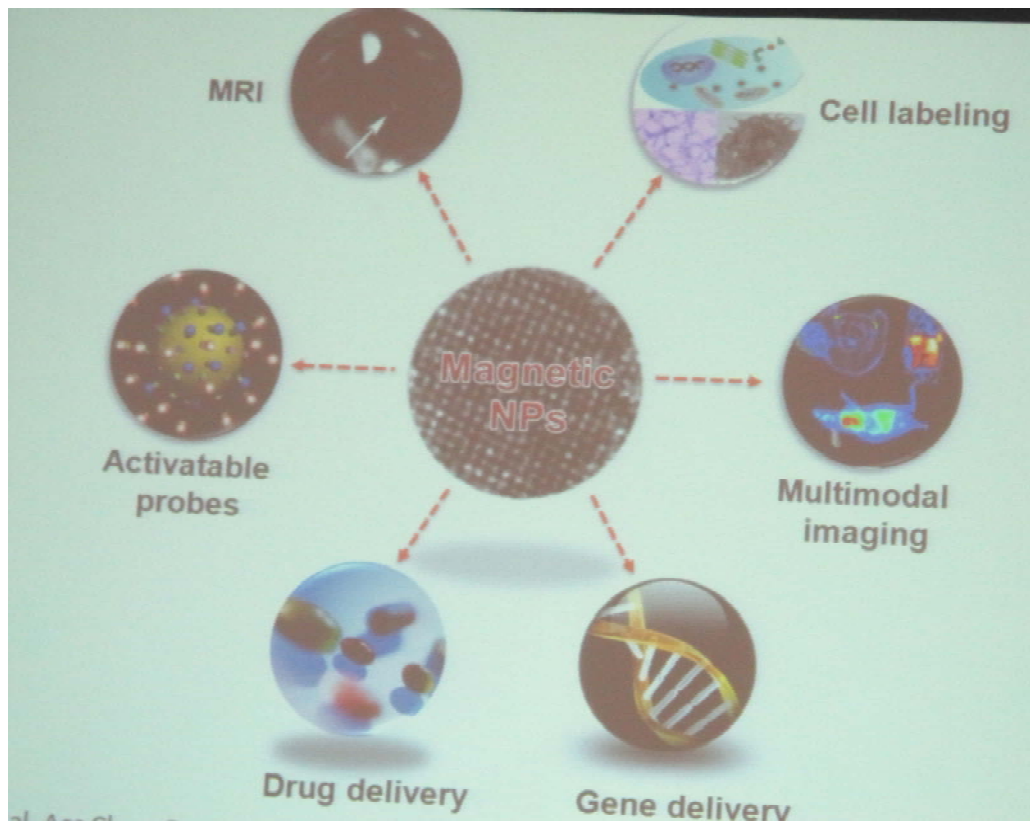
Conclusions

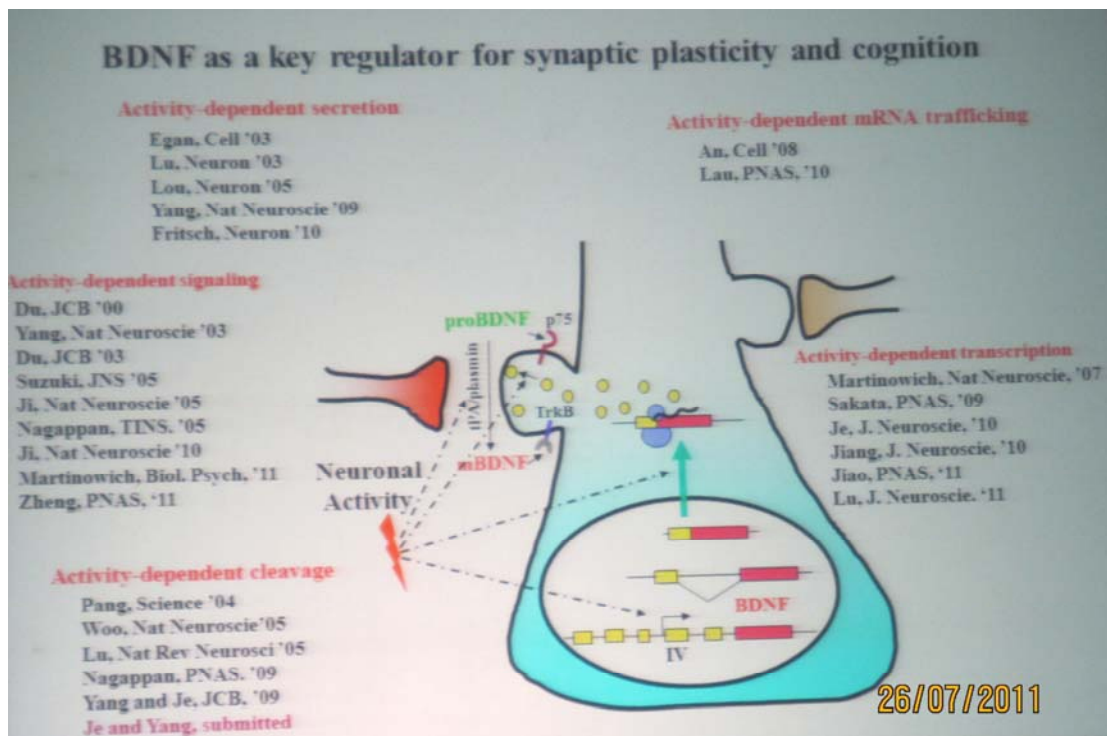
- Hypoxia imaging is increasingly being used in the clinical imaging of tumor hypoxia and is progressing from a mere detection method to application in individualization of chemotherapy and radiotherapy.
- Although the current PET hypoxia imaging methods show promising results, but searching for an "ideal" SPECT hypoxia imaging agent will be continued.

附件十八

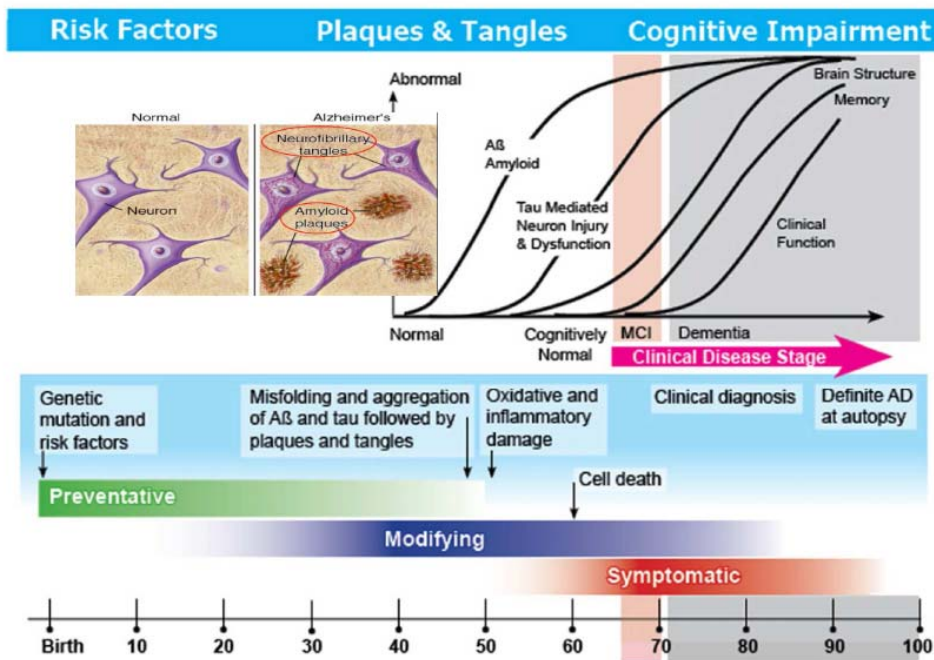


附件十九

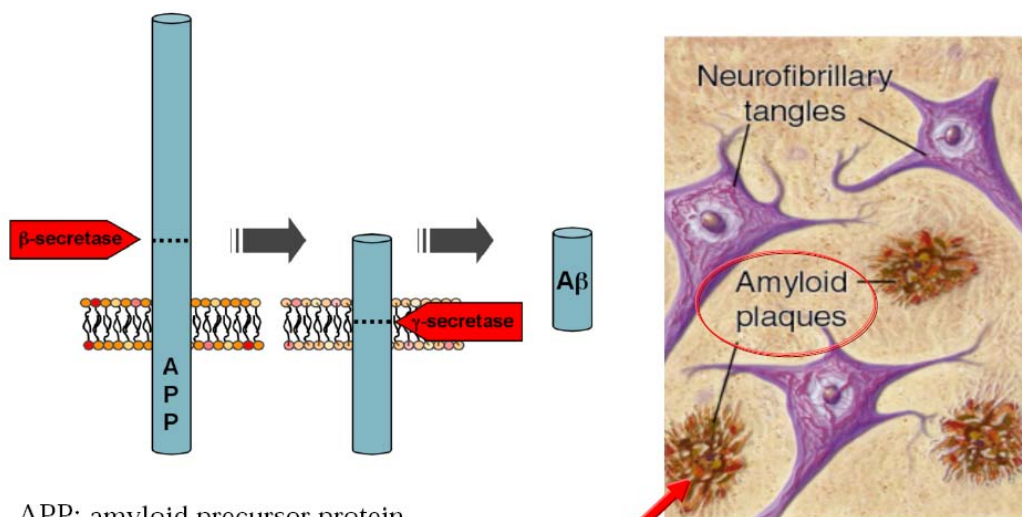




Time Line for the Onset and Progression of AD



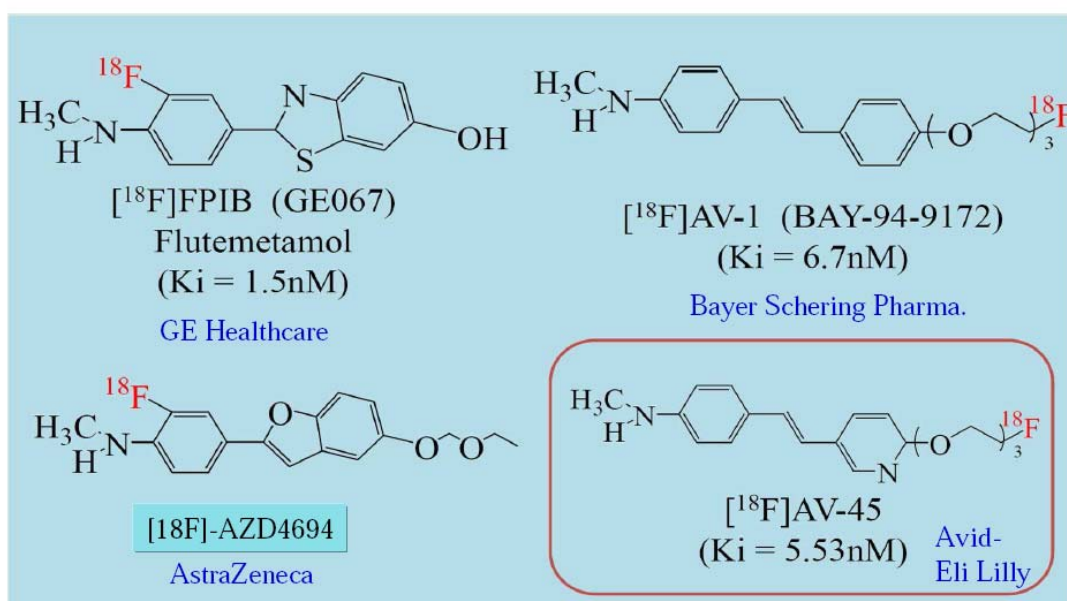
Hallmarker of Alzheimer's disease



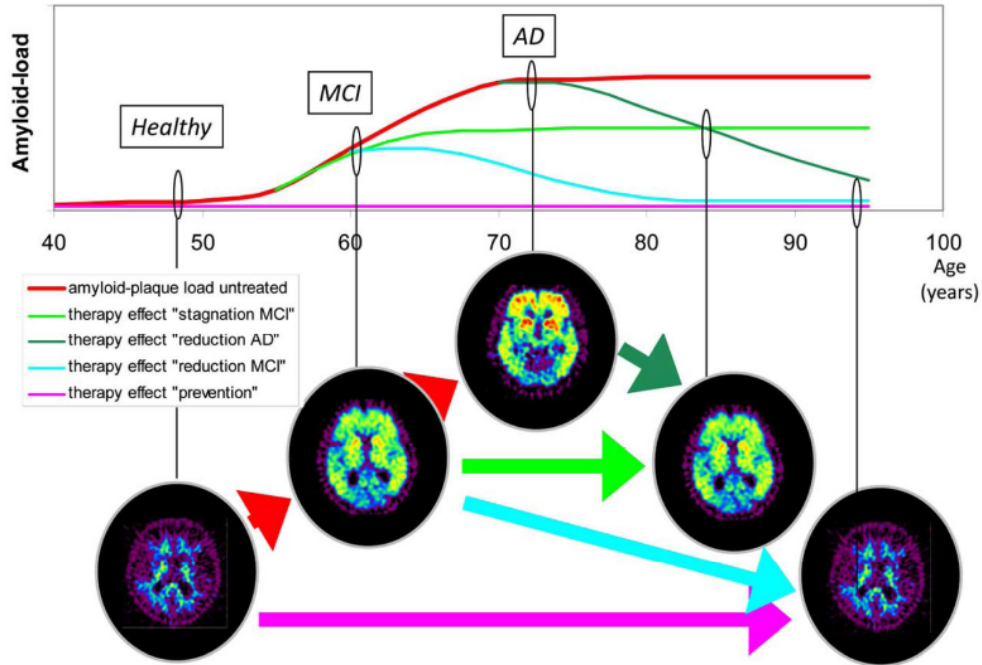
APP: amyloid precursor protein

Amyloid Plaques ----The **target** for developing imaging agents

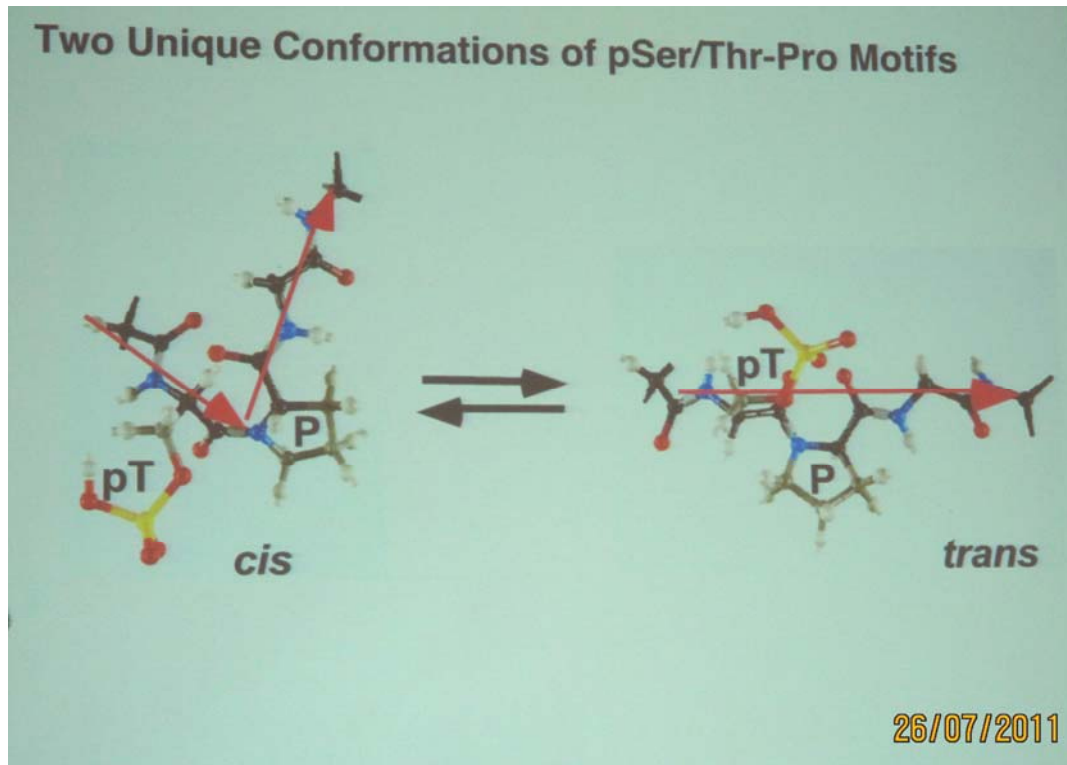
PET Imaging Agents For Amyloid Plaques



Amyloid-plaque Imaging of Potential Therapy Effects in AD

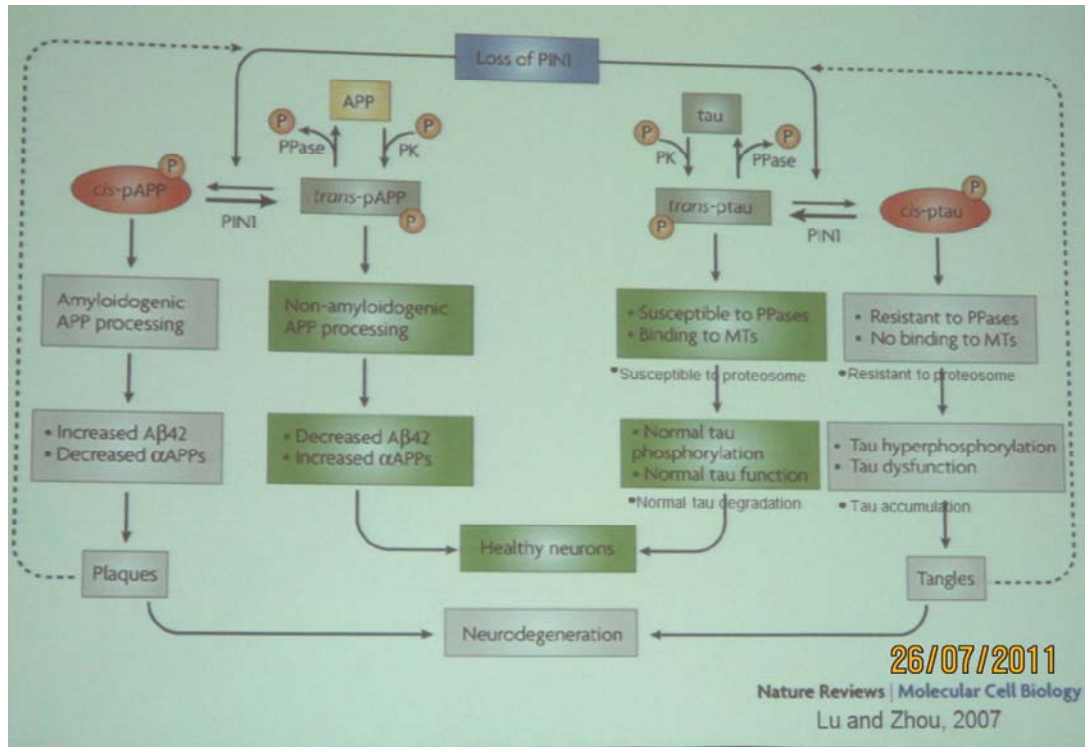


The Open Nuclear Medicine Journal, 2010, 2, 53-57

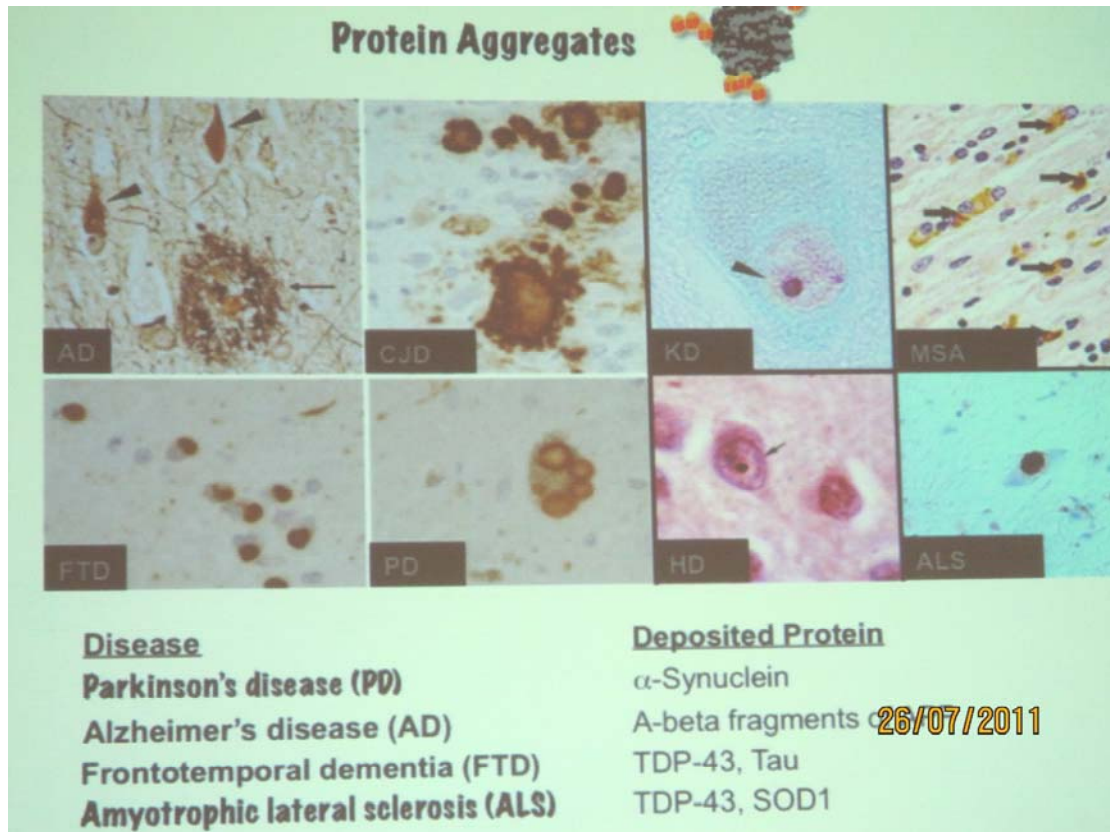


附件二十六

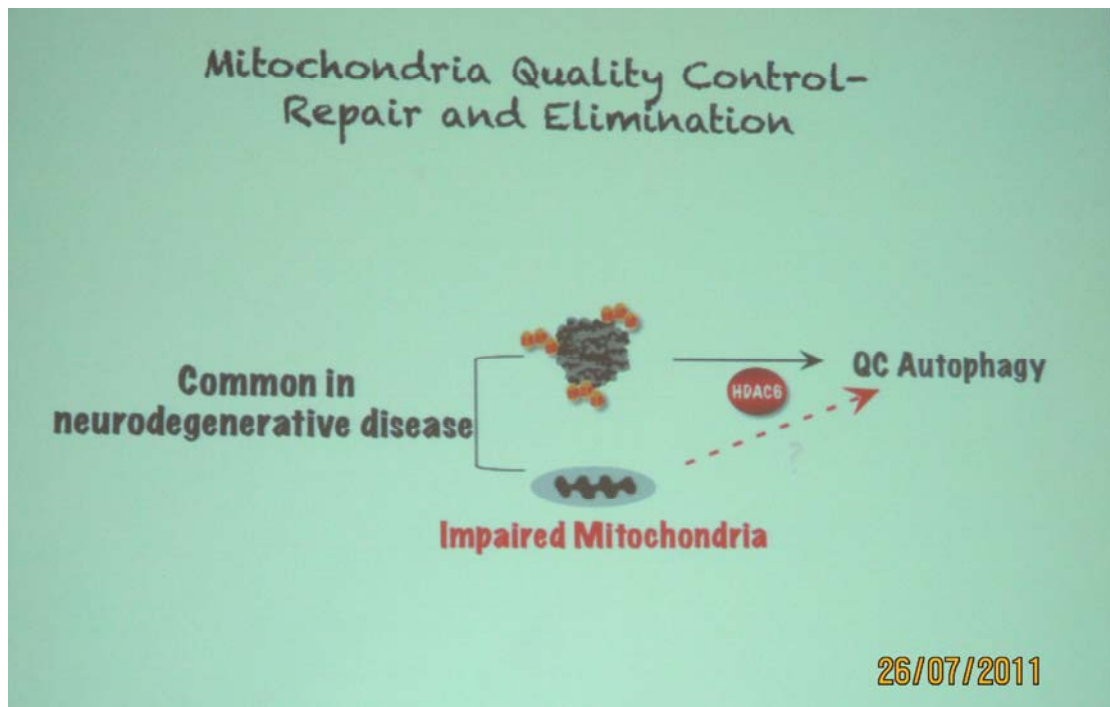
Neurofibrillary Tangles and A β Pathologies in AD



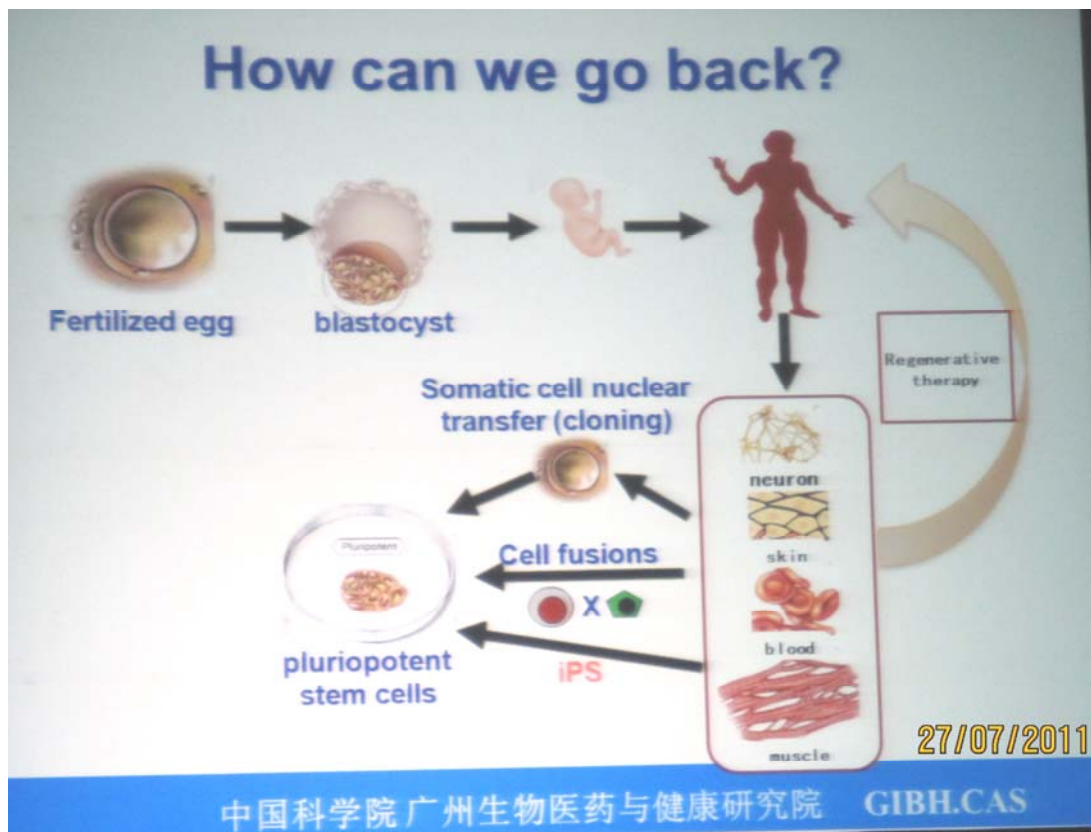
附件二十七

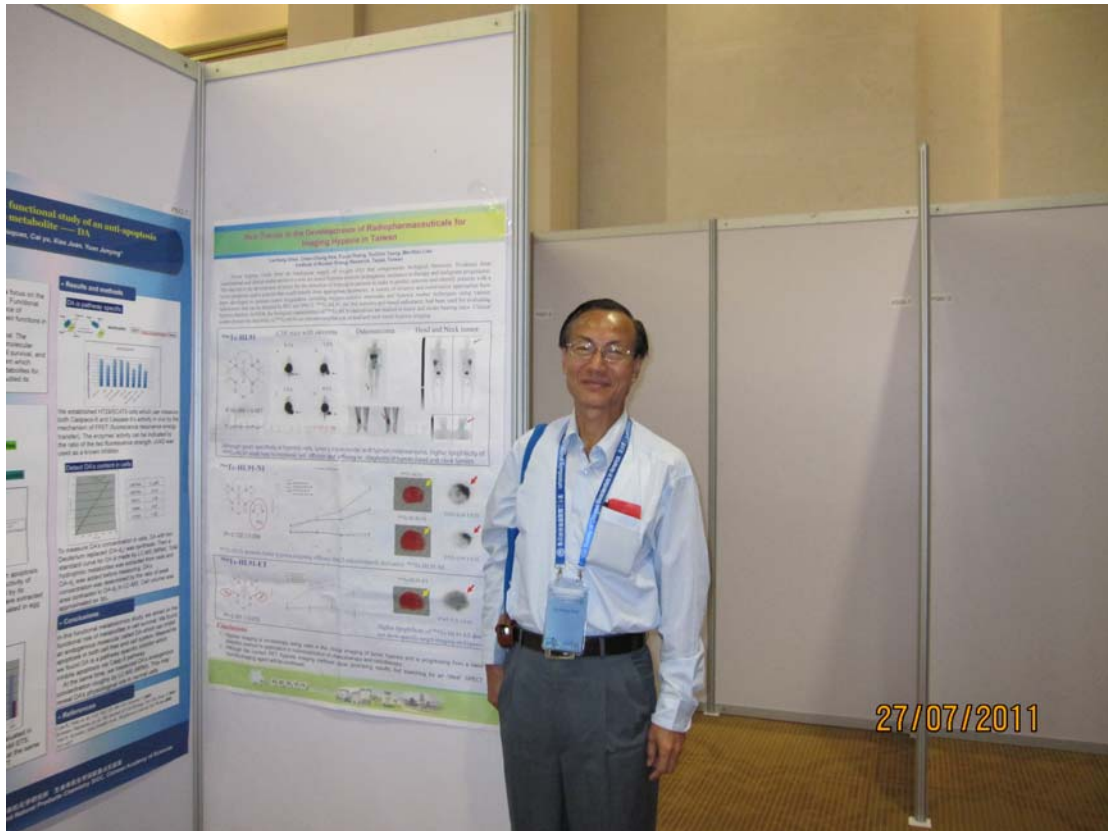


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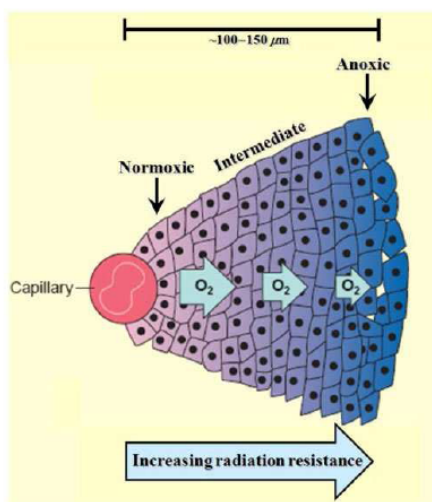


附件二十九





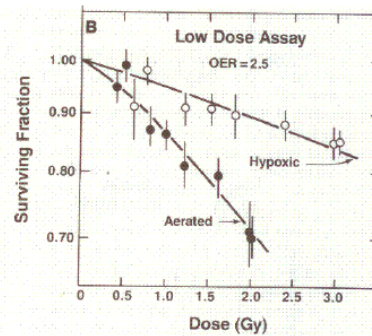
Tumor Hypoxia Impact on Outcome of Therapy



□ Hypoxia cause resistance in therapy

Chemotherapy : low flow rate & metabolic rate

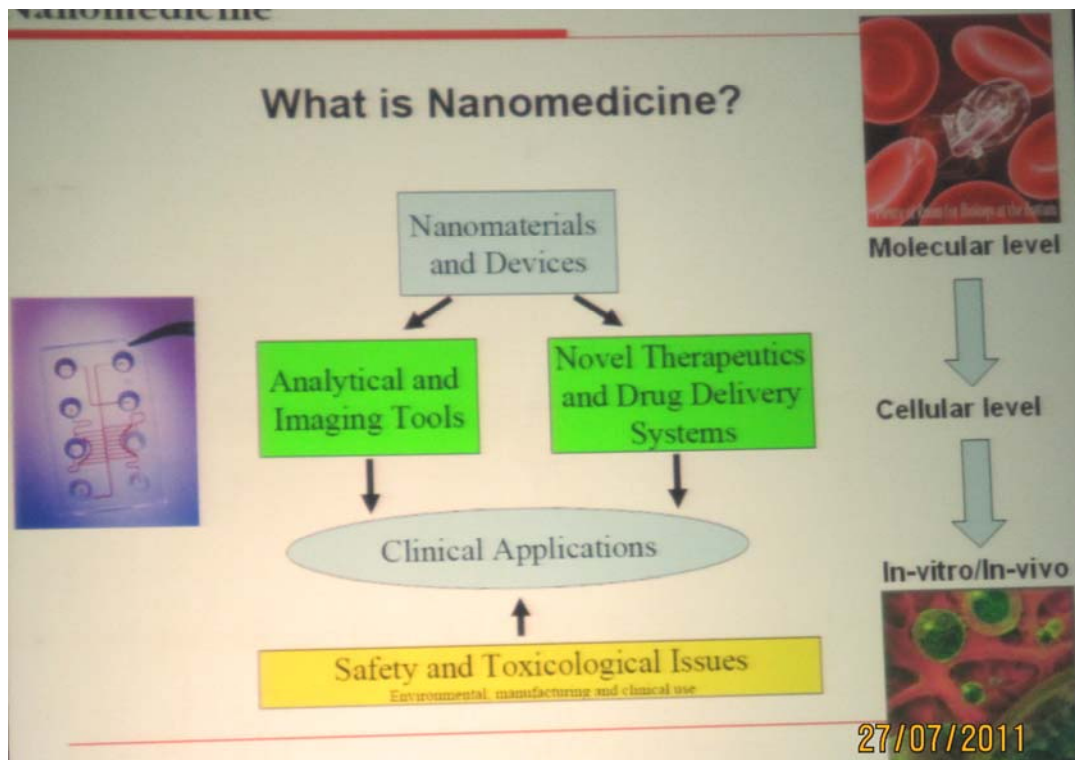
Radiotherapy : Oxygen Enhancement Ratio (OER) effect



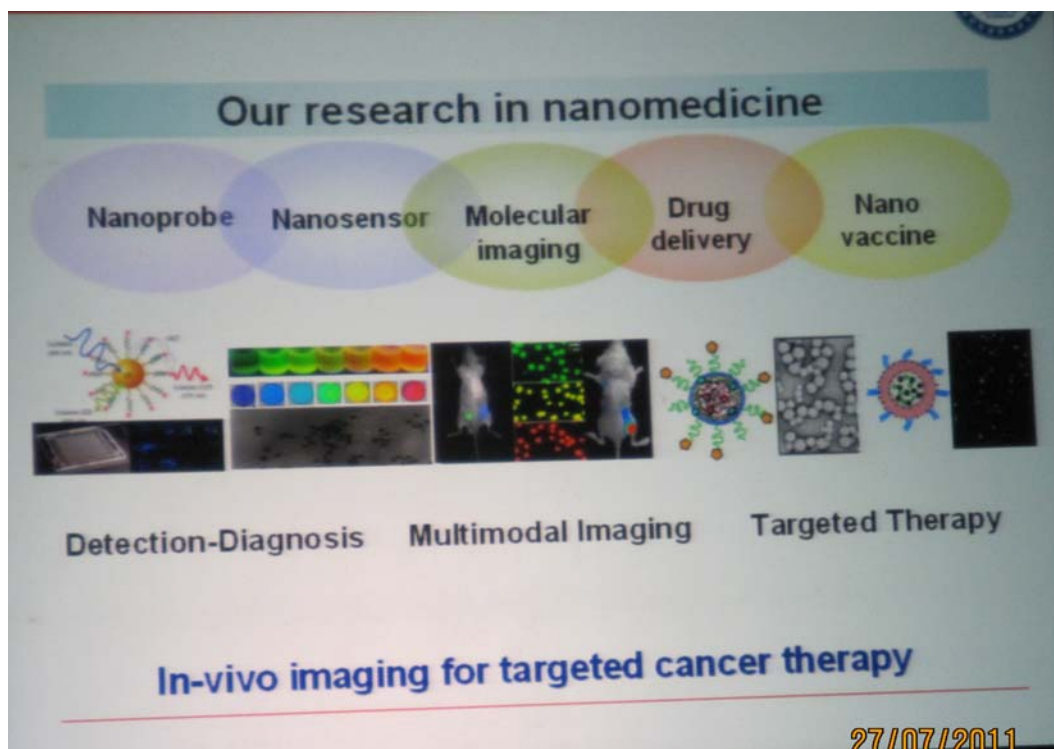
Brown J M Cancer Res 1999;59:5863-5870

$$\text{OER} = \text{Ratio} \frac{\text{Dose in Hypoxia Conditions}}{\text{Dose in Aerated Conditions}} = \text{SAME Cell Survival}$$

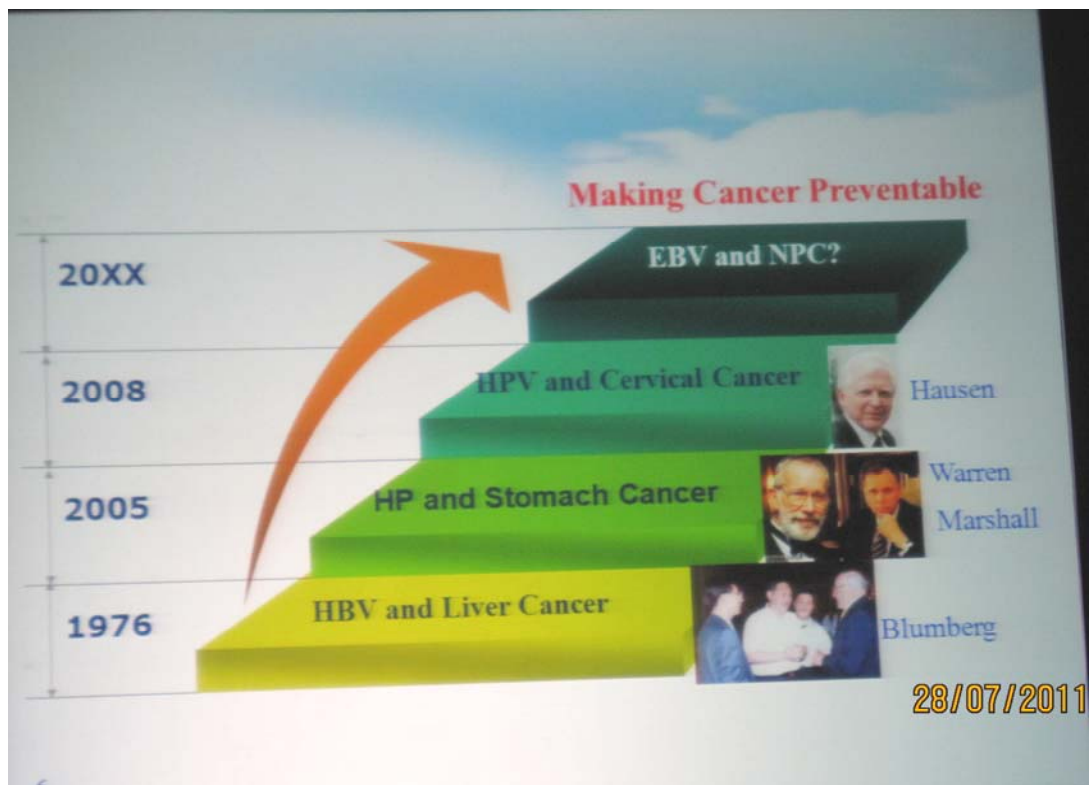
附件三十二



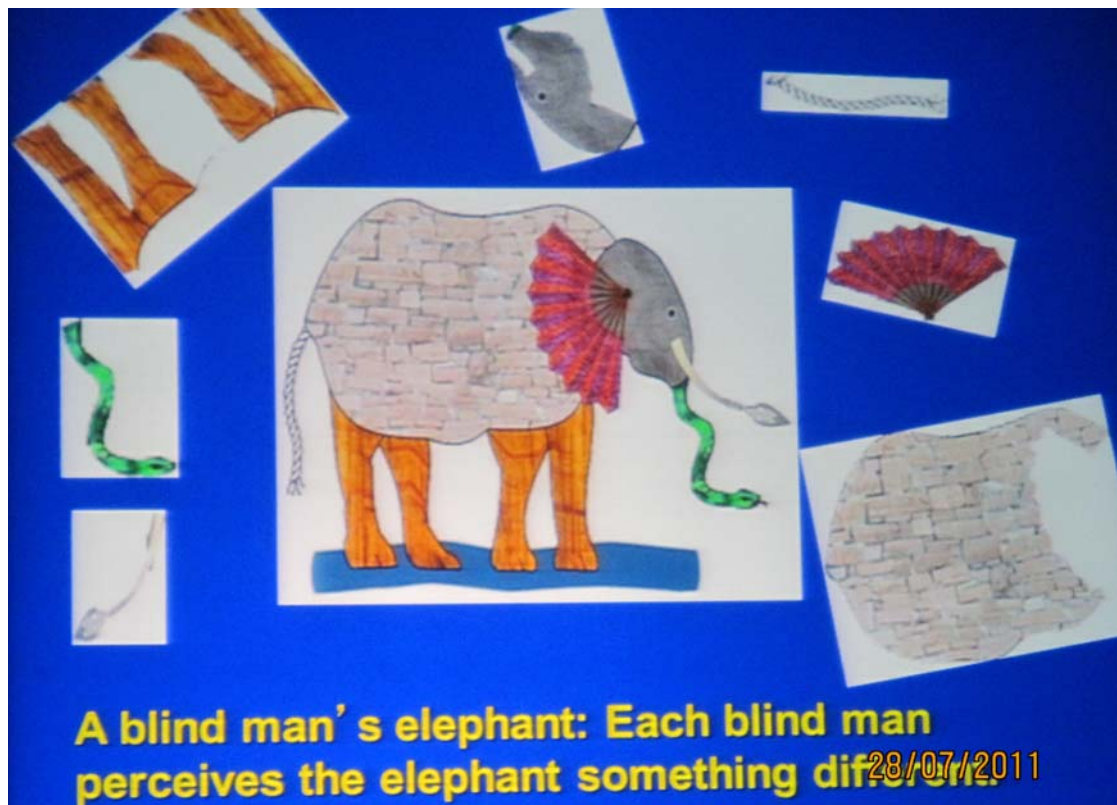
附件三十三



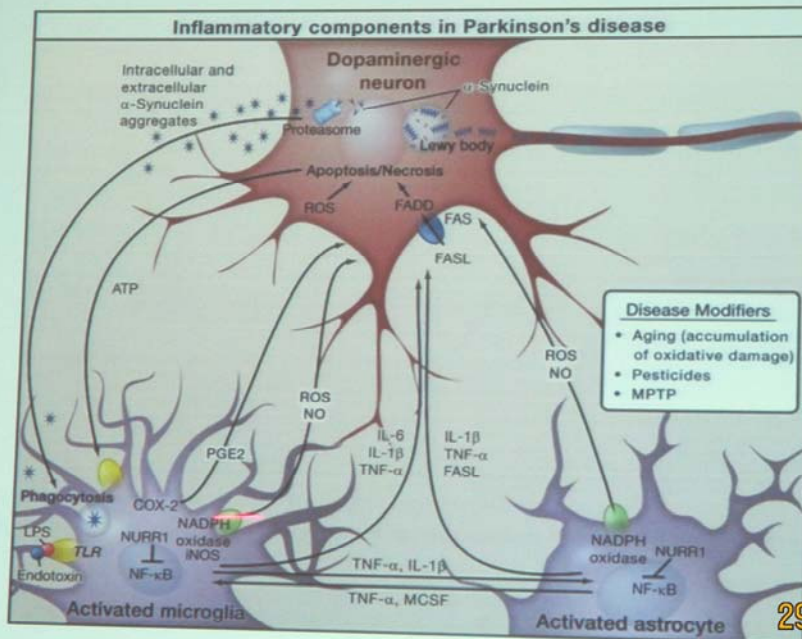
附件三十四



附件三十五



Current views on regulation of neuroinflammation in the pathogenesis of PD



29/07/2011

3

Gage et al. Cell 2010