第一屆動態生醫指標暨轉譯醫學國際研討會

國立中央大學 民國百年四月十六、十七日

"It was the best of times, it was the worst of times…" This could be the description of modern medicine today. On one hand, the technological advancements in biomedicine enable us to gather overwhelming amounts of information about our bodies, ranging from genomic and molecular information, all the way to images and physiological signals. On the other hand, the large amount of additional information does not seem to help us to curb the escalating health care costs we are facing.

One strategy to bring down the health care costs is by accelerating the *translation* of new knowledge from research laboratories to clinical practice, the so-called *translational medicine*. Successful implementation of translational medicine may lead to many innovative interventions, and ways for early diagnosis of diseases. A promising, but less recognized direction for this translation is to extract dynamical features hidden in the signals collected by new technologies.

Life is a dynamical process. Thus, it is not surprising that disease processes alter important aspects of healthy dynamics. These changes, therefore, could serve as useful dynamical signatures of the underlying disease states. In recent years, significant progress has been made in decoding these dynamical patterns and using them as biomarkers. The key challenge is that the analytical tools developed for the purpose of measuring *dynamical biomarkers* have to be physically meaningful, mathematically rigorous, and clinically relevant. To meet this challenge, researchers in multiple disciplines, from mathematics, physics, computer science, engineering, to biomedical sciences, have to work together. To this end, the National Science Council of Taiwan established a new *International Research-Intensive Center of Excellence: Center for Dynamical Biomarkers and Translational Medicine,* to explore this new research area. For the inaugural symposium, we bring leading interdisciplinary researchers together to discuss innovative approaches to utilize dynamical patterns in health and disease for better clinical care.

演講者（依演講順序排列）	
Gene Stanley	美國國家科學院院士 / 波士頓大學物理系教授
陳適安	台北榮民總醫院內科部心臟科主任
李弘謙	國立中央大學系統生物與生物資訊研究所所長 / 生物物理講座教授
黃鍔	中央研究院院士 / 美國國家工程學院院士 / 國立中央大學數據分析方法研究中心主任
Kun Hu	布里格姆婦女醫院 / 哈佛醫學院助理教授
楊智傑	竹東榮民醫院主治醫師 / 陽明大學精神科講師
彭仲康	貝斯以色列女執事醫療中心 / 哈佛醫學院非線性醫學研究中心主任
何奕倫	台大醫院心臟衰竭中心主任
林亮宇	台大醫院心臟科主治醫師
江行全	元智大學副校長 / 元智大學工業工程系講座教授
謝建興	元智大學機械工程學系教授
Lewis A. Lipsitz	哈佛醫學院教授 / 貝斯以色列女領事醫學中心高年科主任
Peter Novak	麻薩諸塞醫學院神經內科教授
廖漢文	台大醫院神經影像專科主任
Vera Novak	貝斯以色列女執事醫療中心 / 哈佛醫學院 老年醫學副教授
王署君	台北榮民總醫院神經醫學中心副主任 / 國立陽明大學醫學院神經科教授
Robert J. Thomas	哈佛醫學院睡眠醫學副教授
蘇木春	國立中央大資訊工程系教授兼系主任
郭博昭	國立陽明大學腦科學研究所教授兼所長
主題主持人	
李光申	國立陽明大學臨床醫學研究所教授
陳文逸	國立中央大學化學工程與材料工程學系教授
范守仁	台大醫學院麻醉部主任
馬惠明	台大醫學院急救醫學部 / 公共衛生學院副教授
蔡世仁	台北榮民總醫院精神部教授 / 科主任

詳見網址：① http://rcada.ncu.edu.tw/avtivities1.htm ② http://cdbtm.org/ 或電洽：03-4258184 江小姐
地點：國立中央大學大講堂（桃園縣中壢市中大路 300 號）

四月十六日星期六		
09:00-09:20AM	報到	
09:20-09:30AM	開場演說	國立中央大學 蔣偉寧校長 / 黃鍔
主題一：生物醫學跨領域研究方法 (09:30-11:20AM) 主持人：李光申		
09:30-10:20AM	**Keynote**: Can Physical Science Contribute to Solving Biomedical Challenges?	Gene Stanley
10:20-10:50AM	The Role of Signal Analysis in Treatment of Atrial Fibrillation	陳適安
10:50-11:20AM	Copy Number Variation in Genomes	李弘謙
主題二：可適性數據分析方法在生醫及臨床之研究 (11:20-03:00PM) 主持人：陳文逸		
11:20-12:10PM	**Keynote**: My Pilgrimage in Data Analysis	黃鍔
12:10-01:30PM	午餐	
01:30-02:10PM	Assessing Dynamics of Cerebral Blood Flow Regulation Using Hilbert-Huang Transform	Kun Hu
02:10-02:40PM	Adaptive Analysis of Epidemiological Time Series	楊智傑
02:40-03:00PM	休息	
主題三：複雜度及動態生醫指標 (03:00-05:20PM) 主持人：范守仁		
03:00-03:40PM	Dynamical Complexity and its Biomedical Applications	彭仲康
03:40-04:10PM	The Prognostic Significance of Multiple-scale Entropy for the Patients with Systolic Heart failure: A Pilot Study	何奕倫
04:10-04:40PM	Detrended Fluctuation Analysis in the Prediction of Shockable Ventricular Fibrillation: An Automated External Defibrillator Wave Form Analysis	林亮宇
04:40-05:00PM	Applications of Multi-scale Entropy (MSE) Analysis for Center of Pressure (COP) Data	江行全
05:00-05:20PM	Applications of Entropy Analysis for Depth of Anaesthesia and Texture of Lymphomas	謝建興
四月十七日星期日		
09:00-09:20AM	報到	
主題四：腦血管疾病和老化 (09:20-12:10PM) 主持人：馬惠明		
09:20-10:10AM	**Keynote**: Loss of Complexity in Aging: The Physiologic Basis of Frailty	Lewis A. Lipsitz
10:10-10:50AM	How the Deep Brain Stimulation Drives the Brain: Possible Mechanisms	Peter Novak
10:50-11:00AM	休息	
11:00-11:30AM	Ultrasound Data Analysis in the Neck and Brain by Using a HHT Approach	廖漢文
11:30-12:10PM	Brain Aging is Accelerated in Diabetes	Vera Novak
12:10-01:30PM	午餐	
主題五：大腦和行為 (01:30-04:10PM) 主持人：蔡世仁		
01:30-02:10PM	Reversible Cerebral Vasoconstriction Syndrome	王署君
02:10-02:50PM	The Biological Music and Cacophony of Sleep	Robert J. Thomas
02:50-03:00PM	休息	
03:00-03:30PM	A Visualization Map that Aids in Detecting Activated Regions in fMRI	蘇木春
03:30-04:00PM	Long-term and Real-time Monitoring of Cardiovascular Signals at Home	郭博昭
04:00-04:10PM	總結	黃鍔 / 彭仲康