



**The 2018 EITA Healthcare Innovation and  
Entrepreneurship Workshop  
(EITA-Healthcare Ventures 2018)**

**"Smart, Precision, and Preventive Medicine:  
Challenges, Opportunities, and Future Directions"**

**Conference Proceedings**

**Taipei Economic and Cultural Office in New York  
1 East 42nd Street, New York, NY 10017**

**Friday, April 27, 2018**

**<Draft: 4/25/18>**

**Table of Contents**

*Table of Contents* ..... 2  
*Welcome Message* ..... 3  
*Conference Themes*..... 4  
*Planning Committee* ..... 5  
*Conference Program*..... 8  
*Abstracts and Biographies* ..... 11  
*Day 1 (Friday, April 27, 2018)*..... 11  
    *Opening Session*..... 11  
    *Plenary Session (I)* ..... 16  
    *Plenary Session (II)* ..... 19  
    *Plenary Session (III)*..... 22  
    *Plenary Session (IV)* ..... 25  
    *Plenary Session (V) & Panel Discussions* ..... 28  
    *Closing Remarks* ..... 33

**Welcome Message**

## **Conference Themes**

### **"Smart, Precision, and Preventive Medicine: Challenges, Opportunities, and Future Directions"**

The EITA-Healthcare Ventures 2018 conference consists of five plenary sessions:

- **Plenary Session 1: The Current Status and Future of Precision Medicine**
- **Plenary Session 2: Integrating Precision Medicine: Technical Challenges and Solutions**
- **Plenary Session 3: Advancing the Clinic with Emerging NGS Technologies**
- **Plenary Session 4: Precision Medicine: New Paradigms, Risks and Opportunities for the Pharmaceutical Industry**
- **Plenary Session 5: Health Data, Information, Knowledge, Security, and Privacy**

**The EITA-Healthcare Ventures 2018**  
**The Taipei Economic and Cultural Office in New York**

=====

**Planning Committee**

**Conference Co-Chairs**

Li-San Wang	(王立三)	University of Pennsylvania
Yi-Hsiang (Sean) Hsu	(許益祥)	Harvard Medical School

**Project Manager**

Chiao-Feng Lin	(林嬌鳳)	Partners HealthCare
----------------	-------	---------------------

**Conference Organizers**

Hsueh-Fen Juan	(阮雪芬)	National Taiwan University
Aichi Chien	(簡艾琪)	University of California at Los Angeles
Chun-Nan Hsu	(許鈞南)	University of California, San Diego
Woei-jyh (Adam) Lee	(李偉智)	University of Maryland, College Park
Yaoyu E. Wang	(王耀煜)	Harvard University
Hau-Tieng Wu	(吳浩樞)	Duke University Homepage
Pei-yun S. (Sabrina) Hsueh	(薛沛芸)	IBM T. J. Watson Research Center
Allen Po-Chih Liu	(劉柏池)	The University of Michigan, Ann Arbor
Richard C. Liang	(梁駿騏)	The University of Michigan, Ann Arbor
Leanne Li	(李力恩)	Massachusetts Institute of Technology
Liang-Fu Sun	(孫良輔)	Taipei Economic and Cultural Office in New York

**Program Steering Committee**

Sun-Yuan Kung	(貢三元)	Princeton University
Yung-Fu Chang	(張永富)	Cornell University
Cathy H. Wu	(吳慧華)	University of Delaware
Chyung-Ru Wang	(王瓊如)	Northwestern University
Wei-Jen Tang	(湯惟仁)	The University of Chicago
Yu Shyr	(石瑜)	Vanderbilt University
Tso-Pang Yao	(姚佐邦)	Duke University
Eric Y. Chuang	(莊曜宇)	National Taiwan University
Hsuan-Cheng Huang	(黃宣誠)	National Yang Ming University
Chi-Kuang Sun	(孫啟光)	National Taiwan University

**The EITA-Healthcare Ventures 2018**  
**The Taipei Economic and Cultural Office in New York**

=====

Ching-Yung Lin	(林清詠)	Graphen, Inc and Columbia University
Hung-Yu Kao	(高宏宇)	National Cheng Kung University
Karen Yen-Ching Chen	(程蘊菁)	National Taiwan University
Chien-Yu Chen	(陳倩瑜)	National Taiwan University
Nianhan Ma	(馬念涵)	National Central University
Yen-Tsung Huang	(黃彥棕)	Academia Sinica
Huai-Kuang Tsai	(蔡懷寬)	Academia Sinica
Peng-Chieh Jessica Chen	(陳芃潔)	National Cheng Kung University
Helene Minyi Liu	(劉旻禕)	National Taiwan University
Jui-Hung Hung	(洪瑞鴻)	National Chiao-Tung University
Lee-Wei Yang	(楊立威)	National Tsing-Hua University
Cho-Yi (Joey) Chen	(陳卓逸)	National Yang Ming University

**Program Committee**

**Workshop Track Co-Chairs**

**Plenary Session 1 (P1):**

Yung-Fu Chang (張永富) Cornell University

**Plenary Session 2 (P2):**

Cathy H. Wu (吳慧華) University of Delaware

**Plenary Session 3 (P3):**

Pei-yun S. (Sabrina) Hsueh (薛沛芸) IBM T. J. Watson Research Center

**Plenary Session 4 (P4):**

Yaoyu E. Wang (王耀煜) Harvard University

**Plenary Session 5 (P5): Panel Discussion:**

Sun-Yuan Kung (貢三元) Princeton University

**Publication**

**Conference Program:**

EBMedia, LLC

**Conference Proceedings:**

**The EITA-Healthcare Ventures 2018**  
**The Taipei Economic and Cultural Office in New York**

=====

EBMedia, LLC

**Local Management, General Inquiries & Pre-registration**

Investment & Trade Office, Taipei Economic and Cultural Representative Office in the U.S.  
(駐美投資貿易服務處)

Address: 1 East 42nd Street, 8th Floor, New York, NY 10017, U.S.A.

Telephones: 212-317-7397 (O), 212-826-3615 (Fax)

**On-Site Registration**

Investment & Trade Office, Taipei Economic and Cultural Representative Office in the U.S.  
(駐美投資貿易服務處)

**Web Development**

Michael Hwa-Han Wang

(王華漢)

EBMedia, LLC

**Co-organizing Associations and Co-sponsors**

Taipei Economic & Cultural Office in New York

(駐紐約台北經濟文化辦事處)

Investment & Trade Office, Taipei Economic & Cultural Representative Office in the U.S.

(駐美投資貿易服務處)

## **Conference Program**

### **4/27 (Fri) 1:00 pm - 6:30 pm: Registration**

Room: the 1<sup>st</sup> FL., TECO in New York

### **4/27 (Fri) 1:30 pm - 2:20 pm: Opening Session**

#### **Co-Chairs:**

**Dr. Li-San Wang** (王立三), Associate Professor of Pathology and Laboratory Medicine; Co-Director, Penn Neurodegeneration Genomics Center; Co-Director, Genome Center for Alzheimer's Disease, University of Pennsylvania Perelman School of Medicine

#### **Dr. Yi-Hsiang (Sean) Hsu** (許益祥)

Co-director and Assistant Professor at Harvard Medical School; Associate Member at BROAD Institute of MIT and Harvard

**Room:** Main Auditorium, TECO in New York

#### **Welcome Remarks:**

#### **Ambassador Lily L.W. Hsu**

Director General

The Taipei Economic and Cultural Office in New York

(中華民國駐紐約臺北經濟文化辦事處處長徐儷文大使)

#### **Opening Remarks:**

#### **Dr. Carlo Yuvienco**

Senior Project Manager, Life Sciences

New York City Economic Development Corporation

### **Plenary Sessions:**

#### **4/27 (Fri) 2:20 pm - 3:10 pm: Plenary Session (I): The Current Status and Future of Precision Medicine**

**Chair: Dr. Yung-Fu Chang** (張永富), Professor, Department of Population Medicine and Diagnostic Sciences, College of Veterinary Medicine, Cornell University

**Room:** Main Auditorium, TECO in New York

#### **Dr. Yi-Hsiang (Sean) Hsu** (許益祥)

Co-director and Assistant Professor at Harvard Medical School

Associate Member at BROAD Institute of MIT and Harvard

“Structure of a Leptospira antigen offers high bactericidal antibody accessibility amenable to vaccine design”

#### **Dr. Yung-Fu Chang** (張永富)

Professor, Department of Population Medicine and Diagnostic Sciences



**The EITA-Healthcare Ventures 2018**  
**The Taipei Economic and Cultural Office in New York**

=====

College of Veterinary Medicine  
Cornell University

**4/27 (Fri) 3:10 pm – 4:00 pm: Plenary Session (II): Advancing the Clinic with Emerging NGS Technologies**

**Chair: Dr. Cathy H. Wu** (吳慧華), Unidel Edward G. Jefferson Chair in Engineering and Computer Science; Director, Center for Bioinformatics & Computational Biology; Director, Protein Information Resource; Professor, Computer & Information Sciences; Professor, Biological Sciences, University of Delaware

**Room:** Main Auditorium, TECO in New York

“Advancing the Clinic with Emerging NGS Technologies: Derive Extracellular RNA Biomarker Signatures from Blood using NGS Technologies”

**Dr. Yaoyu E. Wang** (王耀煜)

Associate Director, Center for Computational Cancer Biology  
Dana-Farber Cancer Institute  
Harvard Medical School

“How can we act fast to stop involuntary twisting?”

**Dr. Richard C. Liang** (梁駿騏)

Research Assistant Professor, Department of Neurology  
University of Michigan

**4/27 (Fri) 4:00 pm - 4:10 pm: Break**

**4/27 (Fri) 4:10 pm – 4:35 pm: Plenary Session (III): Integrating Precision Medicine: Technical Challenges and Solutions**

**Chair: Dr. Pei-yun S. (Sabrina) Hsueh** (薛沛芸), IBM Academy of Technology Member, Thomas J. Watson Research Center

**Room:** Main Auditorium, TECO in New York

“Predictive modeling of drug effects and interactions”

**Dr. Ping Zhang** (張平)

Research Staff Member, Center for Computational Health  
IBM T.J. Watson Research Center

**4/27 (Fri) 4:35 pm – 5:00 pm: Plenary Session (IV): Precision Medicine: New Paradigms, Risks and Opportunities for the Pharmaceutical Industry**

**Chair: Dr. Yaoyu E. Wang** (王耀煜), Associate Director, Center for Computational Cancer Biology, Dana-Farber Cancer Institute, Harvard Medical School

**Room:** Main Auditorium, TECO in New York

“From Human Genetics to a Drug Target for Alzheimer’s Disease”

**Dr. Li-San Wang** (王立三)

Associate Professor of Pathology and Laboratory Medicine  
Co-Director, Penn Neurodegeneration Genomics Center  
Co-Director, Genome Center for Alzheimer’s Disease  
University of Pennsylvania Perelman School of Medicine

**4/27 (Fri) 5:00 pm – 6:25 pm: Plenary Session (V) & Panel Discussions: Health Data, Information, Knowledge, Security, and Privacy**

**The EITA-Healthcare Ventures 2018**  
**The Taipei Economic and Cultural Office in New York**

=====

**Moderator: Dr. Sun-Yuan Kung** (貢三元), Professor, Department of Electrical Engineering, Princeton University

**Room:** Main Auditorium, TECO in New York

“Big Data to Knowledge: Integrative Literature Mining and Knowledge Networks for Kinase Drug Analytics”

**Dr. Cathy Huey-Hwa Wu** (吳慧華)

Unidel Edward G. Jefferson Chair in Engineering and Computer Science

Founding Director, Data Science Institute

Founding Director, Center for Bioinformatics & Computational Biology

University of Delaware

“Teaching Medical Knowledge to Humanoid Robots”

**Dr. Ching-Yung Lin** (林清詠)

CEO, Graphen, Inc

Adjunct Professor, Department of Electrical Engineering, Columbia University

**4/27 (Fri) 6:25 pm – 6:30 pm: Closing Remarks:**

**Chairs:**

**Dr. Li-San Wang** (王立三), Associate Professor of Pathology and Laboratory Medicine; Co-Director, Penn Neurodegeneration Genomics Center; Co-Director, Genome Center for Alzheimer’s Disease, University of Pennsylvania Perelman School of Medicine

**Dr. Yi-Hsiang (Sean) Hsu** (許益祥)

Co-director and Assistant Professor at Harvard Medical School; Associate Member at BROAD Institute of MIT and Harvard

**Room:** Main Auditorium, TECO in New York

## **Abstracts and Biographies**

### **Day 1 (Friday, April 27, 2018)**

#### *Opening Session*

#### **Conference Co-Chair**

#### **Li-San Wang (王立三)**

Associate Professor of Pathology and Laboratory Medicine  
Co-Director, Penn Neurodegeneration Genomics Center  
University of Pennsylvania Perelman School of Medicine  
D102 Richards Building, 3700 Hamilton Walk  
Philadelphia, PA 19104 USA  
Tel: +1-215-746-7015  
Email: lswang@penmedicine.upenn.edu

#### **BIOGRAPHY**



Dr. Li-San Wang is Associate Professor of Pathology and Laboratory Medicine and founding Co-Director of the Penn Neurodegeneration Genomics Center (PNGC) at the University of Pennsylvania. He received B.S. and M.S. in Electrical Engineering from the National Taiwan University, and Ph.D. in Computer Sciences from the University of Texas at Austin.

Dr. Wang's research integrates bioinformatics, genomics, and genetics to study neurodegeneration. He is the Principal Investigator of the National Institute on Aging Genetics of Alzheimer's Disease Data Storage Site (NIAGADS), a national genetics data repository established by National Institute on Aging to facilitate access to genetics/genomics data for the study of late-onset Alzheimer's disease. He co-Directs the Genome Center of Alzheimer's Disease (CGAD), a specialized center funded by NIH to coordinate analysis activities for the Alzheimer's Disease Sequencing Project (ADSP), a presidential initiative to sequence the genomes of more than 20,000 individuals and find novel genetic variants for Alzheimer's disease.

**The EITA-Healthcare Ventures 2018**  
**The Taipei Economic and Cultural Office in New York**

---

Opening Session

**Conference Co-Chair**

**Yi-Hsiang (Sean) Hsu (許益祥)**

Co-director and Assistant Professor at Harvard Medical School  
Associate Member at BROAD Institute of MIT and Harvard

BIOGRAPHY



Opening Session

**Welcome Remarks**

**Ambassador Lily L.W. Hsu**

Director General  
The Taipei Economic and Cultural Office in New York  
(中華民國駐紐約臺北經濟文化辦事處處長徐儷文大使)

BIOGRAPHY



**Personal**

- Born in 1962
- Married, husband: Kuo-Yu TUNG

**Education**

- BA, Political Science, National Taiwan University, Taiwan, ROC
- Visiting Scholar, Sigur Center of Asian Studies, George Washington University, USA, 2009

**Professional Career**

- 1986-1987 Desk Officer, Department of Information & Cultural Affairs, Ministry of Foreign Affairs (MOFA)
- 1987-1989 Desk Officer, Department of International Organizations, MOFA
- 1990-1995 Third and Second Secretary, Taipei Economic and Cultural Representative Office in the U.S.A.(Washington, D.C.)
- 1995-1997 Section Chief, Department of International Organizations, MOFA
- 1997-1999 Section Chief, Department of European Affairs, MOFA
- 1999-2001 Assistant Director General, Department of Information & Cultural Affairs, MOFA
- 2001-2005 Director, Administrative Division, Taipei Representative Office in the U.K.
- 2007-2010 Deputy Director General, Department of International Organizations, MOFA

**The EITA-Healthcare Ventures 2018**  
**The Taipei Economic and Cultural Office in New York**

---

- 2010-2012 Director General, Department of International Organizations, MOFA, and concurrently Senior Official of Chinese Taipei in APEC
- 2012-2015 Representative (Ambassador), Taipei Representative Office in Denmark
- 2016- Director General (ambassadorial rank), Taipei Economic and Cultural Office in New York  
Head of UN Affairs Task Force in New York

**The EITA-Healthcare Ventures 2018**  
**The Taipei Economic and Cultural Office in New York**

---

*Opening Session*

**Opening Remarks**

**Dr. Carlo Yuvienco**

Senior Project Manager, Life Sciences  
New York City Economic Development Corporation

**BIOGRAPHY**



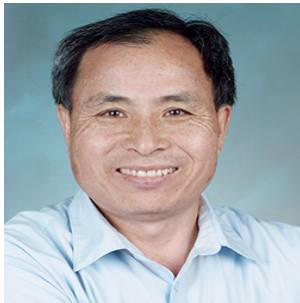
Plenary Session (I)

**Session Chair**

**Yung-Fu Chang (張永富)**

Professor, Department of Population Medicine and Diagnostic Sciences  
College of Veterinary Medicine  
Cornell University, Ithaca, New York 14853

BIOGRAPHY



Dr. Yung-Fu Chang received his M.S. in veterinary science from the University of Idaho and his Ph.D in Microbiology from Texas A&M University. After that, he worked for five years as an assistant research scientist from the Department of medical Biochemistry and Genetics, College of Medicine, Texas A&M. In 1987, he became a diplomat of the ACVM, certified in Bacteriology/Mycology, Immunology and Virology subspecialties. In 1989, he joined Cornell University as an assistant professor; currently, he is a full professor in the Department of Population Medicine and Diagnostic Sciences, where he directs the Infectious Disease Research Laboratory. In 2003, he spent a sabbatical leave at Dr. Gary Schoolnik's laboratory at Stanford University, School of Medicine. His research interests are on molecular basis of bacterial pathogenesis, animal modeling of infectious diseases, DNA and recombinant subunit vaccine development, host defense mechanisms, functional genomics & proteomics, and molecular diagnosis.



Plenary Session (1)

**Plenary Speaker**

**Yi-Hsiang (Sean) Hsu (許益祥)**

Co-director and Assistant Professor at Harvard Medical School  
Associate Member at BROAD Institute of MIT and Harvard

ABSTRACT

BIOGRAPHY



Plenary Session (1)

**Plenary Speaker**

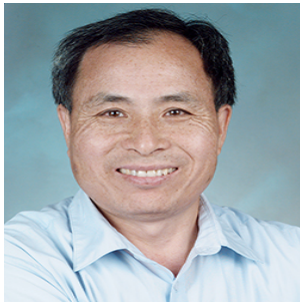
**Yung-Fu Chang (張永富)**

Professor, Department of Population Medicine and Diagnostic Sciences  
College of Veterinary Medicine  
Cornell University, Ithaca, New York 14853

ABSTRACT

On the surface of a cell, receptors and adhesion proteins allow for interactions with the external environment. Exploiting structural information related to cell surface proteins has led to the development of new vaccines. I will describe how protein structures can guide the design of improved therapeutic agents. The multi-domain structure of a protein vaccine candidate was solved and further probed for accessibility to a monoclonal antibody library. The combined effort has led to the development of a recombinant single-domain chimeric vaccine with greatly improved protective properties. This project demonstrates how understanding a target's detailed molecular structure can lead to advancements in therapeutic discovery.

BIOGRAPHY



Dr. Yung-Fu Chang received his M.S. in veterinary science from the University of Idaho and his Ph.D in Microbiology from Texas A&M University. After that, he worked for five years as an assistant research scientist from the Department of medical Biochemistry and Genetics, College of Medicine, Texas A&M. In 1987, he became a diplomat of the ACVM, certified in Bacteriology/Mycology, Immunology and Virology subspecialties. In 1989, he joined Cornell University as an assistant professor; currently, he is a full professor in the Department of Population Medicine and Diagnostic Sciences, where he directs the Infectious Disease Research Laboratory. In 2003, he spent a sabbatical leave at Dr. Gary Schoolnik's laboratory at Stanford University, School of Medicine. His research interests are on molecular basis of bacterial pathogenesis, animal modeling of infectious diseases, DNA and recombinant subunit vaccine development, host defense mechanisms, functional genomics & proteomics, and molecular diagnosis.

Plenary Session (II)

**Session Chair**

**Cathy Huey-Hwa Wu (吳慧華)**

Unidel Edward G. Jefferson Chair in Engineering and Computer Science  
Founding Director, Data Science Institute  
Founding Director, Center for Bioinformatics & Computational Biology  
University of Delaware  
15 Innovation Way, Newark, DE 19711, USA  
Tel: +1-302-831-8869  
Email: wuc@udel.edu

BIOGRAPHY



Dr. Cathy Wu received her B.S. from National Taiwan University and M.S. and Ph.D. from Purdue University. With background in both biology and computer science, she has conducted bioinformatics research for 25 years. She is the Edward G. Jefferson Chair and Director of the Center for Bioinformatics & Computational Biology, and Director of the Bioinformatics Master's, PhD and Graduate Certificate programs at University of Delaware. She leads or co-leads several multi-institutional Consortium projects, including the international UniProt Consortium, with more than 5 million pageviews per month from over 500,000 sites worldwide. Dr. Wu serves on many advisory boards, including the Board of Directors of ACM SIGBio and the NIH National Advisory General Medical Sciences Council, as well as service on several journal editorial boards and over 60 international conference organizing committees. Recognized as a "Highly Cited Researcher" (top 1%), she has published more than 250 peer-reviewed papers with over 28,000 citations, along with 14 books, conference proceedings and journal special issues. Dr. Wu's research encompasses genomic and protein annotation, biomedical text mining and ontology, systems biology, and big data analytics in precision medicine. Recently she has been appointed as the Founding Director of the UD Data Science Institute, serving as a nucleating effort to catalyze and coordinate data science activities across all seven colleges at UD—as data science becomes a rapidly emerging interdisciplinary endeavor with the potential to impact virtually all aspects of human activity.

Plenary Session (II)

**Advancing the Clinic with Emerging NGS Technologies: Derive Extracellular RNA Biomarker Signatures from Blood using NGS Technologies**

**Plenary Speaker**

**Yaoyu E. Wang (王耀煜)**

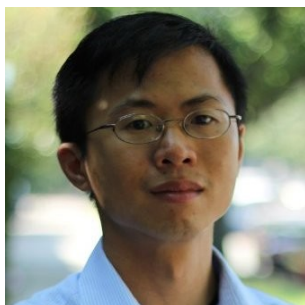
Associate Director, Center for Computational Cancer Biology  
Dana-Farber Cancer Institute  
Harvard Medical School  
450 Brookline Ave, Boston, MA  
Tel: +1-617-582-7282  
Email: yewang@jimmy.harvard.edu

ABSTRACT

The advance of next-generation sequencing (NGS) technology has reduced the cost and the barrier to generate complex genomic datasets rapidly. Its sensitivity in providing unbiased survey of nucleotide content from low quantity input material has made it a powerful tool for novel biomarker discovery. Recently, the presence and relative stability of extracellular RNAs (exRNAs) in biofluids has led to an emerging recognition of their promise as 'liquid biopsies' for diseases. However, the use of NGS sequencing for biofluids poses unique challenges, including low amounts of input RNAs, the presence of exRNAs in different compartments with varying degrees of vulnerability to isolation techniques, and the high abundance of diverse RNA species.

In this talk, I will discuss our experience in optimizing exRNA profiling by NGS technology and our attempt to discover, construct, and validate plasma exRNA biomarker signatures that are associated with heart remodeling following a myocardial infarction.

BIOGRAPHY



Dr. Yaoyu Wang received his B.S from Carnegie Mellon University in Computer Science and Biological Science, and Ph.D from Boston University in Bioinformatics. Dr. Wang has worked extensively in the application of high throughput technologies to the understanding of human diseases and the development of clinical applications of the genomic information. He leads the Center for Cancer Computational Biology at Dana-Farber Cancer Institute that provides browser-based bioinformatics and high-throughput technology consultation to the scientific community, particularly in integrated analysis of multiple types of -omic data. As a member of NCI ITCR program, Dr. Wang leads the development of the popular cloud-based platform for transcriptomic analysis, WebMeV. He is also a member of NIH exRNA consortium working on optimizing RNA-Seq methodology for the analysis of extracellular RNA.

Plenary Session (II)

**How can we act fast to stop involuntary twisting?**

**Plenary Speaker**

**Richard C. Liang (梁駿騏)**

Research Assistant Professor, Department of Neurology, University of Michigan  
4128 BSRB, 109 Zina Pitcher Place, Ann Arbor, United States  
Tel: +1-607-279-5134  
Email: RichardLiangPhD@gmail.com

ABSTRACT

DYT1 dystonia is an inherited neurological disease that manifests as involuntary twisting movements in childhood. The movement deficits are caused by selective neurodegeneration during the central nervous system development. For developing the personalized intervention for this disorders, we face the challenges including ~30% disease penetrance and highly variable, even between siblings, ranging from clinically silent to profound dystonia causing severe disability. To circumvent the additional factors for disease progression, my team not only establishes a workflow to provide the early genomics diagnostics to predict the risk of disease onset but begins to validate small compound candidates for preventive therapeutics.

BIOGRAPHY



Richard Liang's career focuses on human disease modeling to decipher the molecular mechanisms of pathogenesis. Dr. Liang received his bachelor degree at National Taiwan University and Ph.D. degree at Cornell University. His previous scientific achievements include the establishment of the in vitro scratch assay for cancer research, the generation of the first dystonia animal model, and the discovery of a novel mechanism driving developmental neurodegeneration. Currently, Dr. Liang's research direction is to discover biomarkers for early dystonia diagnoses and to develop personalized treatments for the disease prevention. Dr. Liang is a current member in Society of Neuroscience, American Neurological Association, and American Society for Cell Biology.

Plenary Session (III)

**Session Chair**

**Pei-Yun Sabrina Hsueh (薛沛芸)**

IBM Academy of Technology Member  
Research Staff Member, Computational Health and Decision Science Group  
Center for Computational Health, IBM Research  
1101 Kitchawan Road, Yorktown Heights, NY 10598, USA  
Tel: +1-914-356-2413  
Email: pyhsueh@berkeley.edu

BIOGRAPHY



Pei-Yun Sabrina Hsueh received her B.S. from National Taiwan University, M.S. from University of California at Berkeley, and Ph.D. from University of Edinburgh respectively. She is currently an IBM Academy of Technology Member and Research Staff Member in the Center for Computational Health at IBM T.J. Watson Research Center, Yorktown Heights, NY. Currently she is leading the efforts of computational health behavioral understanding based on care management history and personal health data (including those from wearable sensors, mobile and IOT devices). She has been a pioneer in the area of consumer and pervasive health informatics, and is a serial winner of IBM Inventor Plateau awards, Manager Choice Awards, Eminence and Excellence, and Research Achievement Award. She authored 20+ patents, 50+ technical papers, and 3 textbook chapters. She co-chairs the IBM Health Informatics professional interest community and has served on various scientific program committees in ACM, IEEE, AMIA and IMIA. She is elected as the Chair of Consumer and Pervasive Health Informatics Work Group of American Medical Informatics Association (2018-2022). Her expertise on the emerging topics makes her a sought-after speaker and consultant in science-driven industry solutions. Prior to IBM, she worked in the EU FP6 an FP7 Augmented Multiparty Interaction project with 22 partner sites across 7 countries and has been selected as AN European Google Anita Borg Scholar.

Plenary Session (III)

**Plenary Speaker**

**Predictive modeling of drug effects and interactions**

**Ping Zhang (張平)**

Research Staff Member, Center for Computational Health  
IBM T.J. Watson Research Center  
1101 Kitchawan Road, Yorktown Heights, NY 10598, USA  
Tel: +1-914-945-4498  
Email: mail.pingzhang@gmail.com

ABSTRACT

Drug discovery is a time-consuming and laborious process. Lack of efficacy and safety issues are the two major reasons for which a drug fails clinical trials, each accounting for around 30% of failures. By leveraging the diversity of available molecular and clinical data, predictive modeling of drug effects could lead to a reduction in the attrition rate in drug development.

In this talk, I will introduce my recent work on machine-learning techniques for analyzing and predicting clinical drug responses (i.e., efficacy and safety), including: 1) integrating multiple drug/disease similarity networks via joint matrix factorization to infer novel drug indications; and 2) revealing previously unknown effects of drugs, identified from electronic health records and drug information, on laboratory test results. Experimental results demonstrate the effectiveness of these methods and show that predictive models could serve as a useful tool to generate hypotheses on drug efficacy and safety profiles

BIOGRAPHY



Ping Zhang received his B.S. (2004) and M.S. (2007) in Computer Science from the Huazhong University of Science and Technology. He received his Ph.D. (2012) in Computer Science from Temple University. Currently he is a Research Staff Member at the Center for Computational Health, IBM T. J. Watson Research Center.

Dr. Zhang's research focuses on machine learning, data mining, and their applications to biomedical informatics and computational medicine. He has authored more than 40 peer-reviewed scientific articles in top journals and conferences (e.g., Nucleic Acids Research, BMC Bioinformatics, Journal of the American Medical Informatics Association, KDD, AAI, ECML, SDM, and CIKM) and filed more than 20 patent applications. Dr. Zhang has served on the program committees of leading international conferences, including KDD, IJCAI, UAI, and AMIA, and on the editorial boards of CPT: Pharmacometrics & Systems Pharmacology and Journal of Healthcare Informatics Research. He won the best in-use/industrial paper award for ESWC 2016 and received a Marco Ramoni Distinguished Paper nomination at AMIA Summits 2014.

**The EITA-Healthcare Ventures 2018**  
**The Taipei Economic and Cultural Office in New York**

---

More details can be found at

<http://researcher.watson.ibm.com/researcher/view.php?person=us-pzhang>.



Plenary Session (IV)

**Session Chair**

**Yaoyu E. Wang (王耀煜)**

Associate Director, Center for Computational Cancer Biology  
Dana-Farber Cancer Institute  
Harvard Medical School  
450 Brookline Ave, Boston, MA  
Tel: +1-617-582-7282  
Email: yewang@jimmy.harvard.edu

BIOGRAPHY



Dr. Yaoyu Wang received his B.S from Carnegie Mellon University in Computer Science and Biological Science, and Ph.D from Boston University in Bioinformatics. Dr. Wang has worked extensively in the application of high throughput technologies to the understanding of human diseases and the development of clinical applications of the genomic information. He leads the Center for Cancer Computational Biology at Dana-Farber Cancer Institute that provides browser-based bioinformatics and high-throughput technology consultation to the scientific community, particularly in integrated analysis of multiple types of -omic data. As a member of NCI ITCR program, Dr. Wang leads the development of the popular cloud-based platform for transcriptomic analysis, WebMeV. He is also a member of NIH exRNA consortium working on optimizing RNA-Seq methodology for the analysis of extracellular RNA.

Plenary Session (IV)

**From Human Genetics to a Drug Target for Alzheimer's Disease**

**Plenary Speaker**

**Li-San Wang (王立三)**

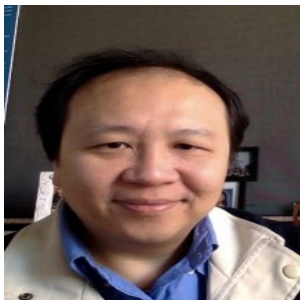
Associate Professor of Pathology and Laboratory Medicine  
Co-Director, Penn Neurodegeneration Genomics Center  
University of Pennsylvania Perelman School of Medicine  
D102 Richards Building, 3700 Hamilton Walk  
Philadelphia, PA 19104 USA  
Tel: +1-215-746-7015  
Email: lswang@penncmedicine.upenn.edu

ABSTRACT

Alzheimer's disease is a progressive neurodegenerative disorder that is effectively untreatable, and invariably progresses to complete incapacitation and death 10 or more years after onset. As the US population ages, Alzheimer's disease patients will increase from 5.4 million in 2016 to 11-16 million in 2050. During the past decade, with improved genotyping and sequencing technologies and availability of larger cohorts such as the Alzheimer's Disease Genetics Consortium (ADGC) and Alzheimer's Disease Sequencing Project (ADSP), dozens of genetic risk factors have been identified.

This talk is an introduction of Alzheimer's disease genetics research aimed for a general audience without background in genetics, genomics or Alzheimer's disease. I will introduce these projects, present the current state of AD genetics, and discuss challenges and opportunities in translating human genetic discoveries into deep insights into disease biology and novel targets for drug development.

BIOGRAPHY



Dr. Li-San Wang is Associate Professor of Pathology and Laboratory Medicine and founding Co-Director of the Penn Neurodegeneration Genomics Center (PNGC) at the University of Pennsylvania. He received B.S. and M.S. in Electrical Engineering from the National Taiwan University, and Ph.D. in Computer Sciences from the University of Texas at Austin.

Dr. Wang's research integrates bioinformatics, genomics, and genetics to study neurodegeneration. He is the Principal Investigator of the National Institute on Aging Genetics of Alzheimer's Disease Data Storage Site (NIAGADS), a national genetics data repository established by National Institute on Aging to facilitate access to genetics/genomics data for the study of late-onset Alzheimer's disease. He co-Directs the Genome Center of Alzheimer's Disease (CGAD), a specialized center funded by NIH to coordinate analysis activities for the Alzheimer's Disease Sequencing Project

**The EITA-Healthcare Ventures 2018**  
**The Taipei Economic and Cultural Office in New York**

---

(ADSP), a presidential initiative to sequence the genomes of more than 20,000 individuals and find novel genetic variants for Alzheimer's disease.

**The EITA-Healthcare Ventures 2018**  
**The Taipei Economic and Cultural Office in New York**

---

*Plenary Session (V) & Panel Discussions*

**Moderator**

**Sun-Yuan Kung (貢三元)**

Professor, Department of Electrical Engineering  
Princeton University

BIOGRAPHY



Plenary Session (V) & Panel Discussions

**Big Data to Knowledge: Integrative Literature Mining and Knowledge  
Networks for Kinase Drug Analytics**

**Plenary Speaker & Panelist**

**Cathy Huey-Hwa Wu (吳慧華)**

Unidel Edward G. Jefferson Chair in Engineering and Computer Science  
Founding Director, Data Science Institute  
Founding Director, Center for Bioinformatics & Computational Biology  
University of Delaware  
15 Innovation Way, Newark, DE 19711, USA  
Tel: +1-302-831-8869  
Email: wuc@udel.edu

ABSTRACT

With the advent of next-generation sequencing (NGS) and other high-throughput omics technologies, systems integration is becoming the driving force for the 21st century biology and medicine. To fully realize the value of such genome-scale data for knowledge discovery and disease understanding requires advanced bioinformatics for integration, mining, comparative analysis, and functional interpretation.

We have developed a bioinformatics research infrastructure that integrates disparate databases and text mining tools in an ontological framework for automatic construction of knowledge networks and visual analysis of omics data. Our natural language processing (NLP) framework supports full-scale literature mining and generalizable relation extraction in a semantic network to connect gene/protein, mutation, miRNA to drug, disease and phenotype in personalized medicine context. Our iPTMnet knowledge networks support exploration of PTM enzyme-substrate relationships, regulation of PTM enzymes, cross-talk, and conservation across species. This talk will highlight collaborative projects with the analysis of panomics data from large-scale national initiatives, including the LINCS (Library of Integrated Network-based Cellular Signatures) and TCGA/CPTAC cancer consortium projects, to further our understanding of the impact of kinase inhibitor drugs on signaling pathways in cancer therapy.

BIOGRAPHY



Dr. Cathy Wu received her B.S. from National Taiwan University and M.S. and Ph.D. from Purdue University. With background in both biology and computer science, she has conducted bioinformatics research for 25 years. She is the Edward G. Jefferson Chair and Director of the Center for Bioinformatics & Computational Biology, and Director of the Bioinformatics Master's, PhD and Graduate Certificate programs at University of Delaware. She leads or co-leads several multi-institutional Consortium projects, including the international UniProt Consortium, with more than 5 million pageviews per month from over 500,000 sites worldwide. Dr. Wu serves on many

**The EITA-Healthcare Ventures 2018**  
**The Taipei Economic and Cultural Office in New York**

---

advisory boards, including the Board of Directors of ACM SIGBio and the NIH National Advisory General Medical Sciences Council, as well as service on several journal editorial boards and over 60 international conference organizing committees. Recognized as a “Highly Cited Researcher” (top 1%), she has published more than 250 peer-reviewed papers with over 28,000 citations, along with 14 books, conference proceedings and journal special issues. Dr. Wu’s research encompasses genomic and protein annotation, biomedical text mining and ontology, systems biology, and big data analytics in precision medicine. Recently she has been appointed as the Founding Director of the UD Data Science Institute, serving as a nucleating effort to catalyze and coordinate data science activities across all seven colleges at UD—as data science becomes a rapidly emerging interdisciplinary endeavor with the potential to impact virtually all aspects of human activity.

Plenary Session (V) & Panel Discussions

**Plenary Speaker & Panelist**

**Ching-Yung Lin (林清詠)**

CEO, Graphen, Inc.  
500 Fifth Ave., 46th Floor, New York, NY 10110, USA  
Tel: +1-212-221-0091  
Email: cylin@graphen.ai

ABSTRACT

In the foreseeable future, we imagine humanoid robots will play an important role in healthcare. One of application scenarios is the use of robots at clinics to assist doctors or clerk staffs. Another application scenario may be using it at home for eldercare to assist with preliminary medical issue consultation.

In this talk, I will introduce our recent work of medical knowledge graphs creation to make robots understand and comprehend questions, reason medical documents, analyze potential causes, and interact with the users. We will show live demos of how human interacts with a medically-knowledgeable humanoid robot. We will discuss the research and development challenges to make such artificial intelligence (AI) progress.

If time allows, I will also shortly introduce our prior work on a secure and privacy preserving data mining technology, which could potentially provide a novel mechanism to allow encrypted healthcare data shared between organizations including physicians and patients, for analysis, without exposing the original clear-text raw data. With this type of End-to-End Encryption-domain data mining, the original institutional or individual data owner can avoid sharing the sensitive to anyone and better control whether, what, when, and where the encrypted sensitive data is accessed. When data are always encrypted, data owner will then not risk of data leakage, and a 3rd party data service provider will not able to secretly monetize sensitive private data without explicit consent.

BIOGRAPHY



Dr. Ching-Yung Lin is the CEO of Graphen, Inc., a startup company dedicated to developing next-generation Artificial Intelligence technologies, especially for novel solutions in the Financial Services industry and the Healthcare industry. Before June 2017, He was the IBM Chief Scientist, in the area of Graph Computing, and an IBM Distinguished Researcher. He led the Network Science and Machine Intelligence Department in IBM T. J. Watson Research Center. He has been an Adjunct Professor at Columbia University since 2005 and was also an Affiliate Professor at the University of Washington 2003-2009 and an Adjunct Professor at NYU in 2014.

Dr. Lin was elevated to IEEE Fellow in Nov 2011 for his contributions to Network Science and Multimedia Security, the first IEEE Fellow in the area of Network Science. He is an author of 180+ publications and 30+ awarded patents. Inspired by human's brain structure of billions to trillions of nodes and edges, his research interest has been on fundamental issues of realizing

**The EITA-Healthcare Ventures 2018**  
**The Taipei Economic and Cultural Office in New York**

=====

Artificial Intelligence of full brain functioning via creating novel Graph Platform. He led to create IBM's first AI product in the financial industry – IBM Watson Surveillance Insight in 2015 and has led various AI FinTech projects 2015-2017. From 2011 to 2016, he also led a large US government's cognitive security project which aims at human behavior understanding and pre-crime prediction. Furthermore, he led a team of 40+ researchers from Columbia University, CMU, Northeastern Univ., Northwestern Univ., UC Berkeley, Stanford Research Institute, Rutgers Univ., Univ. of Minnesota, and NMU in the then largest US social media analysis research project from 2012 to 2015.

In 2015, he was invited by the President of the American Medical Association as a panelist, together with the White House Chief Data Scientist, to discuss the impact of Big Data in Healthcare. He was the founding steering committee chair of the ACM SIG Health Informatics IHI 2010-2012. He was invited as a keynote or plenary speaker in 20+ conferences, including the International Conference on Cybersecurity hosted by FBI in 2016 and the Expo 2.0 in New York Javits Convention Center in 2009. In 2003, he initiated and led 111 researchers in 23 worldwide institutes to make the first-ever large-scale video annotation task to pave the foundation of Supervised Machine Learning of Visual Recognition. His "Big Data Analytics" course in Columbia University has created more than 400 big data application projects and open sources and is the Top 1 search result of Baidu search on Big Data Analytics. His work won 7 best paper awards, shown in 100+ press releases, and was featured 4 times by the BusinessWeek magazine, including being the Top Story of the Week in May 2009. In 2010, IBM Exploratory Research Career Review selected Dr. Lin as one of the five researchers "most likely to have the greatest scientific impact for IBM and the world."



Closing Remarks

**Conference Co-Chair**

**Li-San Wang (王立三)**

Associate Professor of Pathology and Laboratory Medicine  
Co-Director, Penn Neurodegeneration Genomics Center  
University of Pennsylvania Perelman School of Medicine  
D102 Richards Building, 3700 Hamilton Walk  
Philadelphia, PA 19104 USA  
Tel: +1-215-746-7015  
Email: lswang@penmedicine.upenn.edu

BIOGRAPHY



Dr. Li-San Wang is Associate Professor of Pathology and Laboratory Medicine and founding Co-Director of the Penn Neurodegeneration Genomics Center (PNGC) at the University of Pennsylvania. He received B.S. and M.S. in Electrical Engineering from the National Taiwan University, and Ph.D. in Computer Sciences from the University of Texas at Austin.

Dr. Wang's research integrates bioinformatics, genomics, and genetics to study neurodegeneration. He is the Principal Investigator of the National Institute on Aging Genetics of Alzheimer's Disease Data Storage Site (NIAGADS), a national genetics data repository established by National Institute on Aging to facilitate access to genetics/genomics data for the study of late-onset Alzheimer's disease. He co-Directs the Genome Center of Alzheimer's Disease (CGAD), a specialized center funded by NIH to coordinate analysis activities for the Alzheimer's Disease Sequencing Project (ADSP), a presidential initiative to sequence the genomes of more than 20,000 individuals and find novel genetic variants for Alzheimer's disease.

Closing Remarks

**Conference Co-Chair**

**Yi-Hsiang (Sean) Hsu (許益祥)**

Co-director and Assistant Professor at Harvard Medical School  
Associate Member at BROAD Institute of MIT and Harvard

BIOGRAPHY

