Program Book

Boston Taiwanese Biotechnology Association

BOSTON TAIWANESE BIOTECH SYMPOSIUM 2017

BTBATW.org/2017

Welcome Message

On behalf of the Boston Taiwanese Biotechnology Association (BTBA), we would like to welcome you to the 2017 Boston Taiwanese Biotechnology Symposium.

Since the first BTBA symposium in 2013, we have reached our five-year milestone today. We are very proud to share the news that we have attracted more than 330 attendees across the U.S. (from 20 states), Taiwan, and Europe this year! It is our sincere hope that BTBA Annual Symposium becomes a major event among young Taiwanese bio-scientists across the world and a forum for people to share experience, innovation, and friendship.

BTBA was established by a group of young Taiwanese scientists, including graduate students, postdoctoral researchers and young professionals working in biotechnology-related fields in the greater Boston area in 2012. It is officially incorporated in Massachusetts and established as a 501(c)(3) non-profit organization since 2016. In 2017, we have held several successful events such as a series of workshops focused on different sectors across the drug development pipeline. We have continued our fruitful collaboration with Monte Jade of New England (MJNE) offering the second year of "mentorship program" to pass on valuable experience from mentors to mentees. We will also continue to co-organize the third year of "Mini-Symposium for Biotechnology" in Taiwan, which will be held at Academia Sinica on Dec 30th, 2017, to share what it's like studying and working abroad with trainees in Taiwan.

The 2017 BTBA symposium is featured to break the barriers between academia and industry and to enhance communications. Two trending topic sessions will discuss the frontiers of research and novel applications in "Genome-editing" and "Immuno-oncology" from the perspectives of academia and industry. In addition, two new sessions will discuss the nut-and-bolts on how to advance your career no matter where you currently are. For example, we will discuss how to build and manage your team, how to commercialize your research innovation, and/or how to become an entrepreneur. To continue to foster interactions with experts in Taiwan, a group of investigators from Academia Sinica led by the current president, Dr. James Liao, and representatives from several successful companies will join us to introduce career opportunities in Taiwan, share their career paths, and the difference between the U.S. and Taiwan in academia (Academia Sinica) and industry.

Last but not least, we would like to thank you all for joining us. Especially, we would like to express our gratitude to all the speakers and panelists for their time and dedication that makes this event possible, our sponsors for their generous support, and our volunteers for their help at the symposium.

Please email us at btba.tw@gmail.com if you have any questions, comments, or would like to get involved. We hope you will enjoy the symposium and have a great time in Boston!

Sincerely,
Tzu-Hsing (April) Kuo & Hsiao-Ying (Monica) Wey
Co-Chairs, Boston Taiwanese Biotechnology Association

Table of Contents

Organizers

Boston Taiwanese Biotechnology Association 波士頓台灣人生物科技協會

Boston Taiwanese
Biotechnology Association

BTBA 2017 Committees

Co-Chairs			
Hsiao-Ying (Monica) Wey	魏曉英	Assistant Professor	MGH, Harvard Medical School
Tzu-Hsing (April) Kuo	郭姿杏	Scientist	Acceleron Pharma
Keynote			
Yu-Chen (Tony) Tsai	蔡宇承	Postdoc	Harvard Medical School
Nai-Jia Huang	黃乃家	Postdoc	MIT
Program and Panels			
Ching-Huan Chen	陳靖寰	In transition	
Wei-Ting Kuo	郭瑋庭	Postdoc	Harvard Medical School
Wayne Sun	孫維聲	Graduate Student	Northeastern University
Anny Hsieh	謝伊妮	Graduate Student	Boston University School of Medicine
Chih-Chieh Wang	王志傑	Neuroscientist	BioLegend
Yu-Huan Shih	施毓桓	Postdoc	UMass Medical School
Ho-Chou Tu	杜荷洲	Scientist	Alnylam Pharmaceuticals
Cheng-Hao Chien	錢正浩	Postdoc	Tufts University
Yu-Fang Chang	張玉芳	Postdoc	Harvard Medical School
Raghuvir Viswanatha	張龍慕	Postdoc	Harvard Medical School
Kai-Cheng Tsai	蔡鎧丞	Graduate Student	Northeastern University
Trending Topics			
Huei-Mei chen	陳慧美	Postdoc	Harvard University
Ting-Yu Shih	石庭宇	Graduate Student	Harvard SEAS/Wyss Institute
Entry into Industry			
Pai-Chi Tsai	蔡百騏	Postdoc	Harvard University
Chih-Sheng Yang	楊智勝	Senior Scientist	AbbVie

BTBA 2017 Committees (continued)

Roundtable			
Connie Wu	吳康妮	Graduate Student	MIT
Local Biotech Tour			
Huey Ming Mak	麥惠明	Strain Engineer	Ginkgo Bioworks
Abstract			
Yung-Chi Huang	黃詠琪	Postdoc	MIT
Registration			
Victoria	鄭洛宜	Graduate Student	Northeastern University
Venue			
Po-Ting Liu	劉柏廷	Graduate Student	Harvard University
Fundraising			
Chia-Ying (Margaret) Wey	魏嘉英	Clinical Pharmacist	Massachusetts General Hospital
Shiao-Chi Chang	張筱琦	Biology Scientist	Pfizer
Amanda Chao	趙芳筠	Graduate Student	Northeastern University
Promotion			
Ta-Ming Liu	劉大鳴	Research Scientist	Eli Lilly
Su Jing Chan	陳淑晶	Postdoc	Massachusetts General Hospital
Administrative			
Chiao-Feng Lin	林嬌鳳	Senior Bioinformatician	Partners Healthcare
Yi-Ying Chou	周怡吟	Postdoc	Boston Children's Hospital
I-Ju Lee	李以如	Postdoc	Dana-Farber Cancer Institute/HMS
Fu-Kai Hsieh	謝富凱	Postdoc	MGH, Harvard Medical School
Jasin Wong	翁嘉遜	Graduate Student	Boston University
Ava Lee	蔡幸君	Tax Accountant	Liberty Mutual Insurance
Yvonne Meng	孟憲薇	Senior Scientist	Merck
Website			
Tsai-Yi Lu	呂采宜	Postdoc	Johns Hopkins University
Mentoring program			
Wei-Chiang Chen	陳偉強	Scientist	Biogen
Leslie Wu	吳佳璘	Scientist	Sarepta Therapeutics
Kuanwei Chen	陳冠煒	Production Associate	Moderna Therapeutics

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駐波士頓台北經濟文化辦事處

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Shian-Huey Chiang, Ph.D, Principal Scientist, Pfizer
Yi-Hsiang Hsu, Ph.D, Assistant Professor, Harvard Medical School
Michael Lee, Ph.D, Director, AbbVie
Lih-Ling Lin, Ph.D, Senior Director, Pfizer

Directions

Northwest Building, Harvard University
52 Oxford St., Cambridge, MA, 02138

By Public Transportation:
Take the MBTA (subway) RED Line to Harvard Square. Local bus #1 #66 #68 #69 #71 #72 #73 #74 #75 #77 #78 #86 #96 can also bring you to Harvard Square.

By Car:
From the Massachusetts Turnpike:
Take Exit 18 (Allston or Brighton/Cambridge). At 2nd traffic light, turn left onto Storrow Drive (Soldiers Field Road). Exit at Harvard Square. Turn right to cross the bridge and you will be on JFK Street headed into Harvard Square.
From the South (I-93 North):
Head north on Route 93, take the Mass Pike.
From the North (I-93 South)
Head south on Route 93 exit onto Storrow Drive west. Take Harvard Square/Cambridge exit. Turn right to cross the bridge and you will be on JFK Street headed into Harvard Square.
From Logan Airport:
As you leave the airport, follow signs to Rt. 90, Mass Turnpike West.

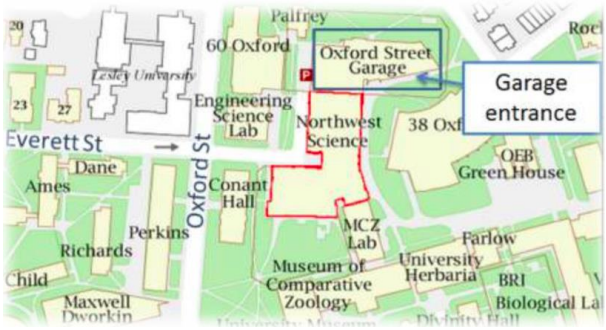
Parking:
On-street parking is scarce in Cambridge, but there are several public parking lots and garages around the square.
If it's a rental car,
We recommend you to check public parking in the Harvard Square:
http://www.transportation.harvard.edu/parking/visitors/public-parking-square

If you have your own car,
We recommend you to use *Harvard University Daily Visitor Parking Permits Online Purchase System* to purchase your parking permit:
https://onedaypermit.vpcs.harvard.edu/cgi-bin/permit/purchase.pl
Please see the next page for the instruction to purchase your parking permit.

Directions

Please note that parking permit can only be purchased from two weeks to one day in advance, but **NOT** on the day of the event.
To use the online purchase system, please have your vehicle license plate number ready at hand and then follow the instructions below:

1. First-time users need to register. To complete the registration (as "visitor"), use "**Visitor to Campus**" as your department and department code **7700**.
2. You will receive a confirmation e-mail from Harvard University Daily Visitor Parking Permits Online Purchase System. Click the provided link to confirm registration.
3. You can now log in as a visitor with username and password you just created.
4. You will be asked to provide department information and department code again, which will be the same as in step 1. This information has to be provided every time after you log in.
5. After entering into the system, **select a parking lot to begin** at the bottom of the webpage. We recommend our attendee to park at **52 Oxford St. Garage** (see the map below for its location.)



6. Weekend parking hours are 7am – 11:30pm. Please state yourself as "**Event Participant**" as your affiliation and specify yourself as "**HTSA event participant**" in "Adding Parking Permits" form.
7. Choose the intended date(s) to park on campus.
8. Provide your vehicle's **plate number** and **issued state**.
9. Hit "Add Parking Permit" button when completed.
10. Confirm/Modify your purchase and then hit "Checkout"
11. Agree with the disclaimer before proceed.
12. After you hit "complete order," you will be re-directed to PayPal.com to pay for the permit. **Please note that if errors occur during re-directing, try to use a different browser (different browsers may work on different computers.)** After logging into the system with a different browser, you should be able to find your unfinished order in "My basket" tab.
13. Use either PayPal account or a debit/credit card to finish purchase.
14. Remember to print the permit and bring it with you on the day coming to the symposium. Put the permit on your dashboard before you leave.
15. Enjoy the symposium!

Schedule

Day 1- Aug. 5 (Sat.)

Time	Sessions	
8:15 AM - 8:45 AM	Registration and poster setup	
8:45 AM - 9:00 AM	Opening remarks	
9:00 AM - 10:00 AM	Keynote Lecture I: Lily Jan, Ph.D. (streaming in Rm B101)	
10:00 AM - 10:30 AM	Group photo and coffee break I	
10:30 AM - 12:00 PM	Panel Discussions I: Academia in the U.S.	Advancing Your Career (Rm B101)
12:00 PM - 1:30 PM	Lunch break	Round Table with Panelists (until 1:00 PM; NW Cafe Seating Area)
1:30 PM - 3:00 PM	Panel Discussions II: Industry in the U.S.	Tech Transfer — Commercialization of life science innovation (Rm B101)
3:00 PM - 3:30 PM	Coffee break II	
3:30 PM - 5:00 PM	Trending Topics I: Genome editing	
5:00 PM - 5:15 PM	Power pitch	
5:15 PM - 6:15 PM	Entry into Industry I: Career opportunities in biotech industry	Special Talks by Ms. Amy Huang (GM of OBI Pharma) and Dr. Tong-Young Lee (CEO of Celtec Inc.) (Rm B101)
6:15 PM - 8:00 PM	Dinner / poster session / Entry into Industry II: My first job in biotech (B1 lobby)	

*Note: All sessions are held in Rm B103 unless otherwise specified

Schedule

Day 2- Aug. 6 (Sun.)

Time	Sessions	
8:00 AM - 8:15 AM	Registration	
8:15 AM - 9:45 AM	Trending Topics II: Immuno-oncology	
9:45 AM - 11:15 AM	Taiwan Focus I: Academia Sinica	Taiwan Focus II: Biotech in Taiwan (Rm B101)
11:15 AM - 11:45 PM	Coffee break III	
11:45 AM - 12:45 PM	Keynote Lecture II: James C. Liao, Ph.D.	
12:45 PM - 1:00 PM	Closing remarks and award ceremony	

*Note: All sessions are held in Rm B103 unless otherwise specified

Speaker Information

Keynote Speakers

Lily Jan, Ph.D. 葉公杼院士

Jack and DeLoris Lange Professor, Physiology and Biophysics at the University of California, San Francisco

Howard Hughes Medical Institute Investigator

Academian of Academia Sinica, Taiwan

Lily majored in physics at National Taiwan University as an undergraduate and received her Ph.D. in Biophysics and Physics at California Institute of Technology. Lily joined UCSF as an assistant professor in 1979 and stayed there since then. She is a member of National Academy of Sciences and a member of Academia Sinica. She is also an investigator of Howard Hughes Medical Institute. Her research focuses on potassium channels, calcium-activated chloride channels and mechanosensitive ion channels in neural cells. As a collaborative effort with her husband, Yuh Nung Jan, she was the first to determine the DNA sequence of a potassium channel in 1987. They have identified several molecules that serve as these ion channels and also investigated how these ion channels work, how the channel activity is regulated and how these channels contribute to cellular functions such as neuronal signaling. Her group also investigates the functions and roles of ion channels in various pathological conditions, such as cancer, seizure and autism. Her research interests also include the mechanisms of dendrite development, the contribution of dendritic morphogenesis and channel modulation to the assembly and plasticity of functional neuronal circuits. She has published more than 300 papers. She also received numerous awards, such as K.S. Cole Award from Biophysical Society, Ralph W. Gerard Prize, Edward M. Scolnick Prize in Neuroscience, Wiley Prize in Biomedical Research, Gruber Prize in Neuroscience and Vilcek Prize honoring contributions of immigrants in 2017.

Keynote Speakers

James C. Liao, Ph.D. 廖俊智院長

Parsons Foundation Professor, Department of Chemical and Biomolecular Engineering at University of California, Los Angeles

President of Academia Sinica, Taiwan

Dr. James C. Liao is a well-known expert in metabolic engineering, synthetic biology, and systems biology. He obtained his B.S degree from the National Taiwan University in 1980 and received his Ph.D. degree at the University of Wisconsin-Madison in 1987. He was in industry shortly as a research scientist at the Eastman Kodak Company before he moved to Texas A&M University in 1990. In 1997, Dr. Liao joined the faculty of UCLA in the Department of Chemical and Biomolecular Engineering. His group uses metabolic engineering, synthetic biology, and systems biology to construct microorganisms to produce next generation biofuels and to alter metabolites for the treatment of metabolic disorders. His group is also interested in developing computational and mathematical tools for investigating metabolism and guiding engineering design. He was elected Fellow of the American Institute for Medical and Biological Engineering and has received numerous awards including the NSF Young Investigator Award, Merck Award for Metabolic Engineering, FPBE Division award of American Institute of Chemical Engineers, Charles Thom Award of the Society for Industrial Microbiology, Marvin J. Johnson Award of the American Chemical Society, Alpha Chi Sigma Award of AIChE, James E. Bailey Award of the Society for Biological Engineering, and Presidential Green Chemistry Challenge Award. James Liao was elected to the National Academy of Engineering in 2013 and to the National Academy of Sciences in 2015. He is also a member of Academia Sinica since 2014 and he has been appointed the 11th president of Academia Sinica in 2016.

U.S. Academic Panel

Yun Chen, Ph.D. 陳昀博士

Assistant Professor, Department of Mechanical Engineering at Johns Hopkins University

Dr. Yun Chen was most recently a Research Fellow with the National Cancer Institute, National Institutes of Health. Dr. Chen completed her Ph.D. in Biomedical Engineering at the University of North Carolina, where her research focused on tracking molecular movements in cells by single particle tracking with fast-sampling high-resolution microscopy. Dr. Chen was a 2010-13 NIH Intramural Research Training Award Fellow at National Institutes of Health and awarded 2007-2010 Joint NIST/NIH Interface Research Associate Fellowship by National Research Council, National Academy of Sciences. Dr. Yun Chen's research efforts are focused on studying how biophysical and biochemical factors are coordinated to achieve homeostasis or facilitate pathogenesis across molecular, cellular and tissue levels. In particular, Dr. Chen uses multi-scale, multi-modality imaging integrating magnetic resonance imaging, optical microscopy and atomic force microscopy to study dynamical regulatory networks and mechano-signaling in cancer and its microenvironment. The physical parameters such as diffusion rate, fluid viscosity, tissue rigidity, electric surface charges, etc., in tumor microenvironment can be probed with the multi-scale, multi-modality imaging platform and subsequently assessed for their contribution in early cancer development. In addition, Dr. Chen is combining mass spectrometry-based proteomics with the imaging tools to identify the key molecules biophysically driving tumor progression. Dr. Chen also partners with clinicians at National Cancer Institute to develop collaborative translational research projects based on her findings.

U.S. Academic Panel

Li-Li Hsiao, M.D., Ph.D. 蕭俐俐博士

Assistant Professor, Brigham and Women's Hospital/ Harvard Medical School

Dr. Hsiao received her M.D. Ph.D. from Thomas Jefferson University in Philadelphia. She then entered the MGH/BWH Nephrology training program at Harvard Medical School (HMS). She is the Director of Asian Renal Clinic at BWH; the co-program director and Co-PI of Harvard Summer Research Program in Kidney Medicine. She is recently appointed as the Director of Global Kidney Health Innovation Center. Dr. Hsiao's areas of research include cardiovascular complications in patients with chronic kidney disease; one of her work published in Circulation in 2012 has been ranked at the top 1% most cited article in the Clinical Medicine since 2013. Dr. Hsiao has received numerous awards for her outstanding clinical work, teaching and mentoring of students including Starfish Award recognizing her effective clinical care, and the prestigious Clifford Barger Mentor Award at HMS. Dr. Hsiao is the founder of Kidney Disease Screening and Awareness Program (KDSAP) at Harvard College where she has served as the official advisor. KDSAP has expanded beyond Harvard campus. Dr. Hsiao served in the admission committee of HMS, a committee member of Post Graduate Education and the board of advisor of American Society of Nephrology (ASN). She was Co-Chair for the "Professional Development Seminar" course during the ASN week, and currently, she is the past-president of WIN (Women In Nephrology).

U.S. Academic Panel

Meng-Fu Bryan Tsou, Ph.D. 鄒孟甫博士

Associate Professor, Cell Biology Program
Memorial Sloan Kettering Cancer Center

Bryan Tsou received both of his B.S. (Biology) and M.S. (Genetics) in Taiwan, in Tunghai University and Yang-Ming University, respectively. He then obtained his Ph.D. from the University of California at Davis, working with Dr. Lesilee Rose on cell polarity and spindle orientation in *C. elegans* embryos. For postdoctoral training, he moved to Stanford and worked with Dr. Tim Stearns on human centrosome biology. Dr. Tsou is a research scholar of the American Cancer Society and currently an associate member/professor at the Memorial Sloan Kettering Cancer Center and Weill Cornell Medical School. His lab aims to obtain a comprehensive understanding of the biogenesis, maintenance and function of the vertebrate centriole/centrosome/cilia, a set of complex organelles whose dysfunction is prevalent in a wide range of diseases collectively called ciliopathy.

U.S. Academic Panel

Jui-Hung (Jimmy) Yen, Ph.D. 顏瑞宏博士

Assistant Professor, Department of Microbiology and Immunology at Indiana University

Dr. Yen received his Ph.D. from Rutgers University and is an Assistant Professor of Microbiology and Immunology at Indiana University School of Medicine-Fort Wayne. The primary focus of his research is to develop anti-inflammatory therapies for the treatment of neurodegenerative diseases including ischemic stroke and multiple sclerosis (MS), and to further dissect the molecular mechanisms underlying the protective effects of these treatments. With regard to ischemic stroke research, his lab is interested in developing anti-inflammatory therapies that can be combined with tissue plasminogen activator (tPA) treatment, the only FDA-approved therapy for ischemic stroke that functions to restore cerebral blood flow by dissolving blood clots but does not offer any protective effects for ischemia-induced neuroinflammation. Animal models, including transient middle cerebral artery occlusion (tMCAO) and embolic middle cerebral artery occlusion (eMCAO), are routinely performed in the lab to study ischemic stroke. With regard to MS research, Dr. Yen's lab has identified a novel therapeutic agent, D_3T, with anti-inflammatory properties and has demonstrated its effects on the suppression of neuroinflammation in the animal models of MS, experimental autoimmune encephalomyelitis (EAE). Further investigation of its effect on the prevention of inflammation-induced demyelination, which causes the neuroglial deficits in the disease, is ongoing.

U.S. Industry Panel

Shian-Huey Chiang, Ph.D. 蔣先慧博士

Principal Scientist/Research Project Leader, Center for Therapeutic Innovation (CTI)-Boston, Pfizer

Shian-Huey received her bachelor's degree from Department of Agriculture Chemistry, National Taiwan University and a master's degree in Biochemistry from National Yang-Ming University. Shian-Huey received a Ph.D. degree in Cellular and Molecular Biology Program under the supervision of Dr. Alan Saltiel at the University of Michigan, Ann Arbor, studying insulin signaling pathway. Shian-Huey stayed in Michigan for post-doc and research faculty positions working on obesity and metabolic diseases with mouse models. During her tenure at the University of Michigan, she published numerous first-author papers in Nature, Cell and Nature Medicine. Shian-Huey spent 4 years in GlaxoSmithKline in North Carolina. Currently, she is a research project leader at CTI, Pfizer in Boston. CTI collaborates with academic labs on drug discovery projects.

U.S. Industry Panel

Carolyn Hsu, Ph.D. 許翠玲博士

Senior Project Manager, CMC Program Management
AbbVie Bioresearch Center, a subsidiary of AbbVie, Inc.

Dr. Hsu is a senior project manager at AbbVie Bioresearch Center, a subsidiary of AbbVie, Inc. She possesses sixteen years of experience in the biopharmaceutical industry, providing technical and regulatory support to biologics drug development and process improvement of active pharmaceutical ingredients. She manages chemistry, manufacturing and controls (CMC) activities from clinical to commercialization, and leads project teams for regulatory filing preparation. She is good at making possibilities real by taking unprecedented tasks and creating pathways to accomplish business objectives, promoting communication across divisions inclusively. Prior to joining AbbVie, she was a research fellow in the infectious disease department at Brigham and Women's Hospital/Harvard Medical School. Dr. Hsu received her Ph.D. degree in Chemistry from Michigan State University and her B.S. degree in Chemistry from National Taiwan University.

Dr. Hsu is active in a wide array of communities and has taken on leadership roles in non-profit organizations. Dr. Hsu currently serves as the president and chairman of the Board of Directors for Monte Jade Science & Technology Association of New England, and has been a board member since 2011.

U.S. Industry Panel

Po-Shun Lee, M.D.

Chief Medical Officer and Execute Vice President, Proteostasis Therapeutics, Inc.

Dr. Lee has been serving as Vice President since December 2015 at Proteostasis Therapeutics. He previously served as Senior Vice President, Clinical Development from May 2015 to December 2015 and as Vice President, Clinical Development from November 2014 to May 2015 at Proteostasis Therapeutics. From February 2013 to November 2014, he served as Translational Medicine Expert at the Novartis Institute for Biomedical Research. From August 2010 to January 2013, Dr. Lee served as the Associate Medical Director at Vertex Pharmaceuticals Incorporated (NASDAQ: VRTX) where he supported the clinical development and registration of Kalydeco® and led a CFTR corrector program to positive proof-of-concept. From May 2005 to August 2010, Dr. Lee served as a physician-scientist at the Brigham and Women's Hospital/Harvard Medical School. He received a B.A. in Biology from the Johns Hopkins University and an M.D. from the University of Pennsylvania.

U.S. Industry Panel

Jamie Tsung, Ph.D. 曾宓博士

Associate Director, Alnylam

Dr. Jamie Tsung received her Ph.D. in pharmaceutical sciences from the University of Connecticut. She is currently Associate Director at Alnylam. Prior to Alnylam, she worked for Shire, Baxter, UCB and Momenta.Her biopharmaceutical experience spans from preclinical to marketed products, integrating formulation, characterization, processing technology, regulatory, and quality control providing a valuable perspective and creative approach to product development.

Advancing Your Career Panel

Wei-Lien Chuang, Ph.D. 莊維廉博士

Director of Clinical Physiochemical Analysis
Sanofi Clinical Diagnostics

Dr. Chuang has more than fifteen years of working experience in the pharmaceutical industry. Since joining Sanofi/Genzyme in 2004, he has played a major role in an international effort to develop newborn screening assays for six lysosomal storage disorders (LSD). The methodology has been adapted in state public health labs such as NY, WA as well as Taiwan and Austria. His team also identified novel sphingolipids as potential efficacy and diagnosis biomarkers for LSD. Another area of his interest is focus on liquid chromatography–mass spectrometry platform development for absolute quantitation of antibody and protein in biological matrices. In his current position, Dr. Chuang leads a group of bioanalytical scientists to develop mass spectrometry based biomarker and enzyme activity assays for patient diagnosis in a Clinical Laboratory Improvement Amendments (CLIA) regulated environment. Prior than that, Dr. Chuang had ten years in academic research. Dr. Chuang received his B.A. degree in chemistry from the National Taiwan University. After that, he received his Ph.D. in Chemistry from the University of California, Riverside. He then completed his postdoctoral research at the University of California, San Francisco.

Advancing Your Career Panel

Ya-Chieh Hsu, Ph.D. 許雅捷博士

Assistant professor, Department of Stem Cell and Regenerative Biology, Harvard University

Ya-Chieh was born and raised in Taiwan and obtained her B.S. degree in life science from National Tsing-Hua University. She completed her Ph.D. at Baylor College of Medicine, where she studied organ size control using Drosophila as a model. During her postdoctoral research at The Rockefeller University, she delineated the lineage contribution and identified critical niche components for hair follicle stem cells. She joined Harvard University as an assistant professor in the summer of 2014. The general interest of the Hsu Laboratory is to discover how the choreographed interaction of diverse cell types enables development, regeneration, and repair of complex organs such as the mammalian skin. Ya-Chieh finds her academic position gratifying because it gives her the freedom to explore her scientific passion, and she also feels privileged to interact with and influence the next generation.

Advancing Your Career Panel

Ronglih Liao, Ph.D. 廖容儷博士

Professor of Medicine, Brigham and Women's Hospital and Harvard Medical School

Dr. Liao received her B.S in Chemistry from Tamkang University and Ph.D. in Biophysics from University of Alabama at Brigham. She conducted the postdoctoral training in cardiac biology and physiology under dual mentorship at Beth Israel Hospital and Brigham and Women's Hospital, Harvard Medical School. She is a basic scientist committed to highly meritorious laboratory investigation, mentoring of the next generation of scientists, and education/service to the scientific community. Her research program has centered upon the interrogation of cardiovascular physiology, from the cellular level to the organismal level, to understand the molecular underpinnings of human heart disease. Her research approaches attempt to bridge the growing span between basic bench research and patient care, with a goal towards identifying novel therapeutic targets for rapid translation into clinical medicine. In pursuit of her scientific goals, her laboratory has developed tools for the comprehensive study of cardiac physiology from single cells to animal models. These tools have been made widely available to the scientific community. Over the course of her academic career, she has taken the greatest pride in mentoring the next generation of scientists, many of whom have gone on to independent academic careers at the highest institutions.

Advancing Your Career Panel

Steve Mo, Ph.D. 莫升元博士

Vice President of Operations and Market Strategy
UnitedHealth Group

Steven Mo received his B.S. in Biology from MIT and Ph.D. in Biomedical Engineering from Oxford University, where a Rhodes Scholar (first one from Taiwan). Prior to his current role, Steven co-founded a medical device start-up, researched at Harvard Medical School, and worked at the Boston Consulting Group (BCG). As a VP of Strategy at Optum/UnitedHealth Group (UHG), he leads and supports large cross-functional teams working on complex growth-related strategic initiatives and innovations. UHG is currently the largest healthcare company in America and the world in terms of revenue; UHG (2016 revenue: U.S.$184 billion) = Optum ($83B) + UnitedHeatlhcare ($101B); while UHC does all health insurance, Optum is the largest healthcare IT/digital health company in America. In his career, Steven has advised senior executives at Fortune 500 healthcare and technology companies on innovation, R&D, operating models, and go-to-market strategies.

Tech Transfer- Commercialization of Life Science Innovation

Adam Friedman, M.D., Ph.D.

Founder and President, Leap Oncology

Adam Friedman, M.D., Ph.D., is a physician, scientist, and entrepreneur. He was a co-founder and Director of Corporate Development at Raze Therapeutics, a next-generation cancer metabolism therapeutic discovery company, launched while an Entrepreneur-in-Residence at Atlas Venture. While at Atlas, he helped to launch biotechnology companies exploring new areas of biology to alleviate human disease. He received his AB in molecular biology from Princeton University and completed the M.D./Ph.D. degree program at Harvard Medical School in the Harvard-MIT Division of Health Sciences and Technology, with graduate work in genetics and cell biology. A licensed Massachusetts physician, Dr. Friedman received training in pediatrics at Boston Children's Hospital. He has authored multiple peer-reviewed publications in the fields of systems biology, cell signaling, genetics, and cancer biology, with an emphasis on novel models for predicting patient responses to cancer therapy.

Tech Transfer- Commercialization of Life Science Innovation

Albert Lin, Ph.D. 林富揚博士

Head of Structural Biology and Protein Biochemistry Morphic Therapeutic

Dr. Lin is currently leading a team of crystallographers and protein biochemists, and is a founding scientist of Morphic Therapeutic (Waltham, MA). Before joining Morphic, Albert was a Research Fellow in the laboratory of Professor Timothy Springer at Boston Children's Hospital, where he discovered the structural basis for a novel class of integrin antagonists. His discovery later led to the formation of Morphic. Dr. Lin received his Ph.D. in Biophysics and Computational Biology from the University of Illinois at Urbana-Champaign, and B.S. in Life Sciences from National Central University, Taiwan.

Tech Transfer- Commercialization of Life Science Innovation

Satinder S. Rawat, Ph.D., MBA

Licensing Officer, Office of Technology Management, University of Massachusetts Medical School at Worcester

Satinder manages a diverse portfolio of intellectual properties spanning Bio-Pharmaceuticals, Medical Devices and Life Sciences. These intellectual properties have been licensed to Bio-Pharma, Medical Device and Research Reagent companies. This portfolio has also helped launch several startups. Notable among these include Agalimmune, an oncology company, Voyager Therapeutics, a gene therapy company and Fulcrum Therapeutics, an epigenetic disease company. He also serves on the Executive Board of M2D2 (Mass Medical Device Development), a Medical Device and Biotech startup incubator located at UMass Lowell.

Trending Topics I: Genome Editing

Julia Joung

Graduate student at Massachusetts Institute of Technology and Harvard University

Julia Joung is a graduate student in the lab of Feng Zhang. She received her B.S. from Stanford University in bioengineering, where she worked with a postdoc in the neurobiology lab of Ben Barres on astrocyte-mediated synaptic pruning. At Stanford, she was selected as the departmental commencement speaker and for the Terman Engineering Scholastic Award. After graduation, as a research scientist at Counsyl, she helped develop a large-scale, cost-effective sequencing protocol for genetic diagnostics. In the lab of Feng Zhang, she develops CRISPR-Cas9 tools for screening long noncoding RNAs and better understanding neurodevelopmental diseases.

Trending Topics I: Genome Editing

Michelle Lin, Ph.D.

Senior scientist at CRISPR Therapeutics

Michelle Lin received her Ph.D. degree in Pharmacology at Yale University, where she helped design and characterize small cell-permeable peptides to target and reduce tumor vascular hyperpermeability as a therapeutic approach in reducing tumor growth. She later trained at Boston Children's Hospital in zebrafish developmental hematopoiesis where she studied factors that contribute to hematopoietic stem cell expansion. She joined CRISPR Therapeutics in 2015 and currently leads the program in treating hemoglobinopathies.

Trending Topics I: Genome Editing

Jui-Cheng Tai, Ph.D.

Postdoctoral researcher at Massachusetts Institute of Technology, Harvard Medical School, and Broad Institute

Dr. Jui-Chen Tai is a senior postdoctoral fellow in the Gusella and Talkowski laboratories in the Center for Genomic Medicine of Massachusetts General Hospital and Harvard Medical School and a trainee in the Program in Medical and Population Genetics at the Broad Institute. He developed an innovative CRISPR-Cas9 strategy to generate reciprocal deletions and duplications by targeting segmental duplications (SDs) to model human genomic disorders, such as intellectual disability, autism spectrum disorder and schizophrenia (Tai et al. 2016, Nature Neuroscience). His long-term career goal is to uncover mechanisms underlying human neurological disorders and develop potential therapeutics. He received his B.S. and master's degree from National Yang-Ming University. During his Ph.D. training at National Defense Medical Center, he studied cellular and molecular mechanisms in spatial learning and memory.

Trending Topics I: Genome Editing

Ru Xiao, Ph.D.

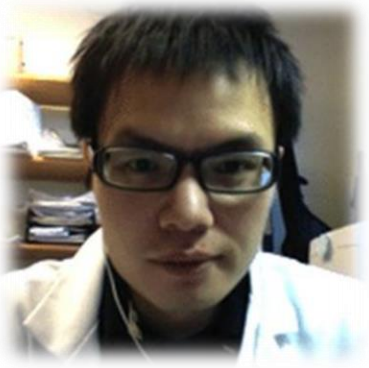
Associate director
Gene Transfer Vector Core
Schepens Eye Research Institute

Ru Xiao received her M.D. in Sun Yat-Sen University of Medical Sciences, where she also got the M.S. degree of Molecular Pharmacology. After 2.5 years of resident training in the Third Affiliated Hospital of Sun Yat-Sen University, she moved to the U.S. and started her postdoctoral training in Dr. James Wilson Lab at UPENN. In the 5-year postdoctoral training, she mainly focused on developing new AAV vector systems for gene therapy, investigating host-vector interaction and gene transfer in eye. In 2012, she was recruited to Dr. Luk Vandenberghe Lab in Schepens Eye Research Institute/Mass Eye and Ear. She helped to establish the Gene Transfer Vector Core and became the associate director of the core. The core provides services of production and QC on AAV vectors. Ru also provides consultation and assistance on viral vector design and construction.

Trending Topics II: Immuno-Oncology

DeKuan Chang, Ph.D. 張德寬博士

Senior Scientist at Torque Therapeutics Inc.



As a scientist, I have a broad background in oncology and immunology, with specific training and expertise in molecular and cellular biology, antibody engineering and optimization, chimeric antigen receptor T cell generation and activation, nanoparticle and drug delivery, and humanized animal model. My research includes translational medicine associated with therapeutic efficacy analysis of anti-cancer drugs, including antibody, nanoparticle, and CAR T cells. Currently, I have worked on engineered antibody and nanoparticles in activation of tumor-specific T cells, developing effective measures of mode of action, cytotoxicity to tumor cells, and establishing proper in vivo study that make it possible to identify anti-tumor immunity and preclinical study.

Trending Topics II: Immuno-Oncology

Christopher Garris

Ph.D. candidate
Harvard Immunology Program, Pittet Lab
Center for Systems Biology, Massachusetts General Hospital

Christopher Garris is a 5th year graduate student in the Immunology Program at Harvard Medical School. He is conducting his thesis research in the laboratory of Mikael Pittet at the Center for Systems Biology at Massachusetts General Hospital. He is investigating the mechanisms of cancer immunotherapeutic drugs, in particular anti-PD-1, and has developed novel platforms to decipher anti-cancer immune responses using intravital imaging.

Trending Topics II: Immuno-Oncology

Aileen Li, Ph.D. 李瑋薇博士

Postdoctoral researcher
Engineering Sciences, Mooney Lab
John A. Paulson School of Engineering and Applied Sciences
Wyss Institute for Biologically Inspired Engineering
Harvard University

Aileen is a Ph.D. candidate in the School of Engineering and Applied Science at Harvard University, under the supervision of Professor David Mooney. She received her B.S. in Biomedical Engineering from the Georgia Institute of Technology and her M.S. in Bioengineering from Harvard University. Her research interest is engineering novel biomaterials based strategies to enable robust cancer vaccination. Her work has been published in many high impact peer reviewed journals such as Nature Biotechnology and she is the recipient of a number of competitive awards including the National Science Foundation (NSF) Graduate Research Fellowship and the Harvard University Pierce Fellowship.

Trending Topics II: Immuno-Oncology

Karrie Wong, Ph.D.

Lab Head/Investigator II
Exploratory Immuno-Oncology
Novartis Institutes for Biomedical Research (NIBR)

Karrie Wong, Ph.D., is an immunologist with over 10 years of research experience in areas of cancer immunology and immunotherapy. She received her Ph.D. from the University of Toronto, where she explored the role of CD200 in immunomodulation in the context of cancer and as a therapeutic target for Chronic Lymphocytic Leukemia. Upon completing her Ph.D., Karrie joined Dr. Glenn Dranoff's laboratory at Dana Farber Cancer institute as a postdoctoral fellow and investigated molecular targets for myeloid cell immunosuppression. Karrie joined the newly formed Exploratory Immuno-Oncology (IO) department at NIBR in 2015 as a research investigator. Currently, she is a Lab Head at NIBR leading exploratory research projects in IO space. Her research interest includes cancer vaccine and immune-metabolism.

Entry into Industry I: Career Opportunities in Biotech Industry

Fiona Kuo, Ph.D. 郭亦炘博士

Associate Director and Clinical Research Scientist
Incyte Corporation

Fiona Kuo grew up in Taipei. She obtained her B.S. degree in Life Science from National Taiwan Normal University. She received her Ph.D. in Pathology from University of Rochester, where she gained extensive experience working as an intern of Clinical Research Coordinator to support a Phase II clinical trial in atopic dermatitis in the Department of Dermatology. After graduated from University of Rochester, over the course of time from 2013 to 2016 she worked in Brigham and Women's Hospital, Biogen Idec, and Akebia Therapeutics as Clinical Research Assistant, Clinical Project Coordinator and Clinical Project Manager, respectively. Fiona had managed clinical trials and epidemiological studies in multiple therapeutic areas including inflammatory diseases, pain management, cardiovascular and neurodegenerative diseases. In 2017, she recently joined Incyte Corporation at Pennsylvania as Associate Director, Clinical Research Scientist in Advanced Medicines Group.

Entry into Industry I: Career Opportunities in Biotech Industry

Ray Lin, Ph.D., MBA 林伯睿博士

Senior Scientist
Assay Development
OriGene Technologies Inc.

Ray Lin graduated from the Agricultural Chemistry Department in National Taiwan University. He received his Ph.D. degree in Biology from Georgia State University, where he developed the two-electrode voltage clamp and patch clamp techniques to study E. coli protein-conducting channels. He then became a postdoctoral fellow at Leidos Biomedical Research, Inc./National Cancer Institute at Frederick and focused on the HIV and cancer research. He studied the regulation of HIV in immune system and the cancer signaling pathways. Currently, he is a senior scientist in the Assay, Immunology, and Molecular Biology Department at OriGene Technologies, Inc. His works involve in multiplexed assay product development by using Luminex and ELISA technology, antibody development, and lentiviral particle production. Ray also received his MBA degree from Johns Hopkins Carey Business School in 2015.

Entry into Industry I: Career Opportunities in Biotech Industry

Wei Chou Tseng, Ph.D. 曾薇洲博士

Postdoctoral Researcher
Internal Medicine Research Unit
Pfizer Inc.

Wei Chou Tseng received her B.S. degree in Biochemistry and Biotechnology from NTU in 2007. She then pursued her doctorate degree in Pharmacology and Cancer Biology at Duke University where she was trained as a molecular cell biologist and biochemist with focus on neuroscience. She joined Pfizer Neusentis as a postdoc and after one year she transferred to Pfizer R&D site at Cambridge Massachusetts to continue her postdoctoral training. Being through numerous company reorganization and restructuring, she now works in the newly-formed Pfizer Internal Medicine Research Unit. Her current interests include developing novel drug targets in therapeutic areas such as schizophrenia, Alzheimer's disease, Parkinson's disease, and neuroinflammation.

Entry into Industry I: Career Opportunities in Biotech Industry

Louis Yang, M.S. 楊錦宇

Scientist II
Ophthalmology
Novartis Institutes for Biomedical Research

Louis Yang received his master degree training in Biochemistry at Argonne National Laboratory and Illinois Institute of Technology in Chicago, IL. He then joined the Dana-Farber Cancer Institute in Boston, MA as a research associate in the crystallography group, where he conducted and managed a large-scale protein expression and purification platform to support understanding of protein structure as it pertained to anti-cancer drug development. He then became a senior research associate at Synta Pharmaceuticals, where he was responsible for target discovery and validation of anti-cancer drugs. In 2009, he joined Novartis Institutes for Biomedical Research in the Ophthalmology group. As a Scientist II at Novartis, his responsibilities include drug screening (small molecules and antibody-drug conjugates) and collaboration with chemistry, DMPK, in vivo groups and outsourcing companies to develop innovative therapies for eye diseases. Louis grew up in Taipei and received his B.S. degree in Biology from Tunghai University in Taiwan.

Entry into Industry I: Career Opportunities in Biotech Industry

Joon Chong Yee, Ph.D. 余駿昌博士

Sr. Scientist II
Biologics Process Development
Bristol-Myers Squibb

Joon Chong Yee recieved his Ph.D. in Chemical Engineering at University of Minnesota where he applied gene expression and proteomics to study recombinant protein production in CHO (Chinese hamster ovary) cell culture. He joined Genzyme in 2008 as a Process engineer to develop robust scale-down models for commercial, perfusion-based bioprocesses. In 2011, he joined Bristol-Myers Squibb as a Scientist with responsibility of developing cell culture processes in laboratory and executing tech transfers to clinical and commercial manufacturing facilities in New Jersey, New york and Massachusettes. Joon Chong has 9-year experience serving as process development lead for early stage and late-stage biologic pipelines.

Entry into Industry II: My First Job in Biotech

Shiao-Chi Chang, M.S. 張筱琦

Biology Scientist
Pfizer

Shiao-Chi Chang has a M.S. degree in Microbiology and Immunology and 7-month experience in pharmacology and assay development.

Wei-Ting Chang, M.S. 張瑋婷

Scientific Associate II
Novartis

Wei-Ting Chang has a M.S. degree in Pharmaceutical Sciences and 2-year experience in Structural Biology and Biochemistry.

Yi-Shan Chen, Ph.D. 陳怡珊博士

Scientist
CRISPR Therapeutics

Yi-Shan Chen has a Ph.D. degree in Biochemistry/Infectious disease and 1-year of experience in gene-based therapy in hematology.

Entry into Industry II: My First Job in Biotech

Priscilla Lee, Ph.D. 李靜蓉博士

Postdoc Fellow
Inflammation and Immunology Research Unit
Pfizer

Priscilla Lee has a Ph.D. degree in immunology and years of experience in autoimmune disease research.

Ying-Jou (Agnes) Lin, M.S. 林穎柔

Associate Scientist II
Bluebird Bio

Ying-Jou (Agnes) Lin has a M.S. degree in Biotechnology and over 2 years of working experience in the biotech industry.

Shih-Ching (Joyce) Lo, Ph.D. 羅時菁博士

Scientist
Biogen

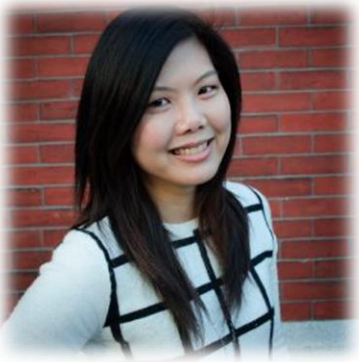
Shih-Ching (Joyce) Lo has a Ph.D. degree in Biochemistry with over 9 years of experience in disease biology and drug discovery.

Entry into Industry II: My First Job in Biotech

Huey-Ming Mak, M.S. 麥惠明

Strain Engineer
Ginkgo Bioworks

Huey-Ming Mak has a M.S. degree in Biotechnology and 3 years of experience in synthetic biology.



Hsien-Wei (Yvonne) Meng, Ph.D. 孟憲薇博士

Senior Scientist
Merck

Hsien-Wei (Yvonne) Meng has a Ph.D. degree in Biological and Biomedical Sciences with 2-year experience in Biologics Discovery and Protein Engineering.

Anson Peng, M.S. 彭聲翔

Scientist I
Novartis

Anson Peng has a M.S. in Microbiology and a M.S. in Neuroscience, with two and half year work experience in cancer model generation and compound screening.

Entry into Industry II: My First Job in Biotech

Hao-Wei Su, Ph.D. 蘇皓瑋博士

Research Scientist
Fitbit

Hao-Wei Su has a Ph.D. degree in Electronic Engineering and Computer Science, and 2 years of experience in the company; 7 years of experience in the medical device area.

Wei Chou Tseng, Ph.D. 曾薇洲博士

Postdoctoral Researcher
Internal Medicine Research Unit
Pfizer Inc.

Wei Chou Tseng has a Ph.D. in Pharmacology and Cancer Biology and has been a postdoctoral fellow at Pfizer since December 2014.

Chih-Chieh Wang, Ph.D. 王志傑博士

Scientist
BioLegend

Chih-Chieh Wang has a Ph.D. degree in Neuroscience and recently joined BioLegend as a scientist and project leader for antibody development.

Entry into Industry II: My First Job in Biotech

Chih-Sheng Yang, Ph.D. 楊智勝博士

Senior Scientist
AbbVie

Chih-Sheng Yang has a Ph.D. degree in Pharmacology and Cancer Biology and 1-year experience on upstream (cell line and cell culture) process development.

Po-Jen (Will) Yen, Ph.D. 顏伯任博士

Business Development
Voyager Therapeutics

Po-Jen (Will) Yen has a Ph.D. degree in Virology and 2-year experience in corporate strategy and business development.

Special Talks

Amy Huang 黃秀美女士

General Manager of OBI Pharma Inc.
台灣浩鼎總經理

Ms. Huang joins OBI, Inc. after a distinguished career at GlaxoSmithKline, where she was Vice President and Regional Director responsible for all commercial operations in China and Hong Kong. Ms. Huang is an inspirational leader and successful executive with numerous awards and achievements, including Outstanding Pharmaceutical Manager (Taiwan) and GSK's Inspirational Leadership Award (2005). Since the merger of Glaxo Wellcome and SmithKline Beecham in 2001, she presided over record country performances during a turbulent period of regulation in Taiwan's pharmaceutical industry. During her tenure as Managing Director of SmithKline Beecham Taiwan, she oversaw the launches of novel products, such as Engerix B, Tagamet, Augmentin, Avandia, and Seretide, representing some of the most successful.

About OBI Pharma, Inc. 台灣浩鼎

OBI Pharma, Inc., was founded in 2002. Its focus is on the "Unmet Medical Needs" in challenging diseases throughout the world, such as Cancer & Infectious Diseases. OBI strives to improve health and the quality of life through innovative and cost-effective therapeutics. OBI's core competence is its R&D expertise in developing novel cancer and infectious disease therapies. The company has an exciting pipeline of products built on a ground-breaking carbohydrate synthesis discovery platform. OBI works in close collaboration with prestigious research institutes, including Academia Sinica of Taiwan and the Memorial Sloane-Kettering Cancer Center of the U.S..

Special Talks

Tong-Young Lee, Ph.D. 李冬陽博士

Founder and CEO, Celtec Inc.
震泰生醫創辦人暨執行長

Dr. Lee is the CEO and Founder of Celtec Inc. which is a start-up company and focus on developing novel cellular immunotherapies based on next generation technology – universal linker platform. Their goal is to revolutionize medicine by re-engaging the body's immune system to treat cancer. Before Dr. Lee founded Celtec, he was the Vice President at Synovel Biosciences Inc. Synovel is using its proprietary class of drugs called ImmuEdit Aptamer TM to target several highly potential immune checkpoint drug targets for cancer treatment. In the meanwhile, he also served as a director at Fountain Biopharma Inc. which is an antibody drug discovery biotech company. Dr. Lee generated a largest fully-human antibody library and developed a first anti-IL6 monoclonal antibody in Asia Pacific area based on this technology platform. This project has gotten NT 40M government funding support. It is in preclinical stage and will get into human clinical trial in 2017. He is both inventor and project leader of this drug candidate. Before Dr. Lee joined Fountain Biopharma, he was working with late Dr. Judah Folkman at Harvard Medical School. Judah Folkman, M.D. (1933-2008), known as the father of angiogenesis research. Three angiogenesis inhibitors, bevacizumab (Avastin), ranibizumab (Lucentis) and ranibizumab (Eylea) were the first to be approved by the U.S. Food and Drug Administration and are now playing a major role in treatment.

About Celtec Inc. 震泰生醫

Celtec 震泰生醫
Life Solution

Celtec is dedicated to achieving one of the most ambitious goals of 21st century medicine: curing cancer. This mission is at the heart of everything Celtec does, from early discovery to product development. Celtec focuses on developing novel therapeutic products that harness a patient's own immune system to target and kill cancer cells. Celtec has two core technologies including fully-human scFv system and universal linker platform for next generation of cellular immunotherapies. Those novel strategies of immune cell therapy have the potential to be more effective and less long-term side effects regardless of the type of current treatments. Moreover, Celtec provides a universal, cost-effective, and easy process cutting-edge technology for cancer therapy.

Taiwan Focus I: Academia Sinica

Shu-Miaw Chaw, Ph.D. 趙淑妙特聘研究員兼主任

Distinguished Research Fellow
Director of Biodiversity Research Center
Academia Sinica

Professor Chaw received her Ph.D. degree (1985) in Tulane University, U.S.A. Her major research focus on phylogenetic relationships among the five groups of extant seed plants. To re-examine this long-standing issue, she has been determining the complete chloroplast and mitochondrial genomes of many key seed plants and lower vascular plants. In addition to obtain a better resolved phylogenetic tree of extant seed plants, she aim to seek for more solid structural evidence for the clades in the tree. Her lab is also interested in the characterization and evolution of novel or useful secondary metabolic genes from some indigenous plants with commercial or pharmaceutical values. She has been also investigating the functional divergence of chlorophyll-degradation-related genes encoded the enzyme Chlorophyllase, whose isoforms are expressed in cotyledons, leaves, fruits, and seed coats of soybeans.

Taiwan Focus I: Academia Sinica

Sheng-Hong Chen, Ph.D. 陳昇宏助理研究員

Assistant Research Fellow
Institute of Molecular Biology
Academia Sinica

I am a curious scientist interested in how cancer cells evolve to be a fragile but yet unbeatable system. Currently I am leading an interdisciplinary research group at Academia Sinica in Taiwan (http://celldynamicslab.strikingly.com/).

Taiwan Focus I: Academia Sinica

Yu-Ju Chen, Ph.D. 陳玉如研究員兼所長

Research Fellow
Director of Institute of Chemistry,
Academia Sinica

Professor Chen received her B.S. degree (1992) from National Taiwan University, and Ph.D. (1997) in Iowa State University. Her research interests include: 1) Advanced bioinformatics-assisted mass spectrometry methods for comprehensive signatures of membrane sub-proteome and its downstream phosphoproteome and nitrosylproteome associated with disease. 2) Surface functionalized nanoprobe-based affinity mass spectrometry for multiplexed quantitation of disease-associated protein markers, discovery of post-translational modification in disease and epitope mapping for drug-interacting protein.

Taiwan Focus I: Academia Sinica

Mei-Yin Chou, Ph.D. 周美吟特聘研究員兼副院長

Distinguished Research Fellow
Institute of Atomic and Molecular Sciences
Vice President of Academia Sinica

Professor Chou received her B.S. (1980) degree from National Taiwan University, M.S. (1983) and Ph.D. (1986) degrees from in University of California, Berkeley, U.S.A. Her researches focus on the electronic structure of condensed matter, and its effects on the structural and dynamical properties of materials. The purposes of her studies are to provide unambiguous explanations for various interesting phenomena observed experimentally in clusters, solids, and surfaces, and to make reliable predictions of new material properties from microscopic quantum theories. Her theoretical efforts can be classified into two categories: (1) the study of the electronic and dynamical properties of technologically important materials, and (2) the development of new algorithms and calculational methods in studying materials properties using quantum mechanics.

Taiwan Focus I: Academia Sinica

Fu-Tong Liu, Ph.D. 劉扶東特聘研究員兼所長暨副院長

Distinguished Research Fellow
Director of Institute of Biomedical Sciences
Academian of Academia Sinica
Vice President of Academia Sinica

Professor Liu received his B.S. degree (1970) from National Taiwan University, and Ph.D. degree (1976) in Chemistry from University of Chicago, Illinois. His research is focused on the investigation of the functions of a family of animal lectins, galectins, in inflammation, innate immunity, cancer, and adiposity. In the area of inflammation, he is studying the roles of galectin-3, -7, and -8 in skin inflammation, by focusing on their regulation of cytokine and chemokine production by keratinocytes. In the area of innate immunity, he is studying 1) galectin-3's effect on retrovirus transmission and influenza virus infection and 2) the role of galectin-8 and -9 in host-pathogen interactions in the gastrointestinal track. In the area of cancer, he is focusing on the role of galectin-3 and -7 in skin cancer. In the area of adiposity, he is focusing on galectin-12. He is devoting an effort to studying the intracellular function of galectins through binding to glycans exposed to the cytosol when intracellular organelles are damaged. He is developing galectin-3 inhibitors for treatment of inflammatory diseases and cancers, and galectin-12 inhibitors to target adipose tissues for the purpose of reducing adiposity.

Taiwan Focus II: Biotech in Taiwan

Ying-Ja (Inca) Chen, Ph.D. 陳映嘉博士

Research Fellow, Bioinformatics

Intellectual Property Manager

ACT Genomics
行動基因研究員

Ying-Ja (Inca) Chen is currently a Research Fellow in the Bioinformatics Division at ACT Genomics and leads the effort in biomarker discovery for cancer immunotherapy. She is also a U.S. patent agent and oversees the intellectual property portfolio at ACT Genomics. Previously, she has held positions in Discovery and Intellectual Property at Axcella Health. Inca received her B.Sc. in Electrical Engineering from National Taiwan University, Ph.D. in Bioengineering from University of California, San Diego and completed postdoctoral fellowship at Massachusetts Institute of Technology.

About ACT Genomics 行動基因

ACT Genomics is the world's leading cancer solution provider. Based in Taiwan, ACT also provides effective services through our offices in Singapore, Hong Kong, Shanghai and Tokyo. Joint by experts from the field of cancer biology, cancer genomics and bioinformatics, ACT provides optimal cancer treatment plan, cancer relapse and drug resistance monitoring as well as cancer risk assessment and immunotherapy evaluation. ACT is dedicated to provide every cancer patient personalized genomic information based-treatment plans through their cutting-edge Next Generation Sequencing (NGS) platform, medical report and integrated services.

Taiwan Focus II: Biotech in Taiwan

Jiann-Shiun Lai, Ph.D. 賴建勳博士

Senior Director, R&D Lab of OBI Pharma Inc.
台灣浩鼎研發處資深處長

Dr. Lai has over 20 years of R&D experiences in the development of biological drugs, especially the therapeutic monoclonal antibodies. Prior to joining OBI, he was the Advisor of Department of Industrial Technology, Ministry of Economic Affairs, sketching out the roadmap for antibody drug development and overseeing Technology Development Programs of organizations and biotech companies for MOEA.

During his stay in Development Center for Biotechnology, preceding his work at MOEA, he had successfully discovered, developed and licensed out two antibody drugs. Besides, he also established and supervised an antibody engineering team in DCB. Prior to this, Dr. Lai was a principle investigator in Academia Sinica more than nine years. During that period of time, his work focused on the understanding of the mechanism of VDJ recombination of immunoglobulin genes. Dr. Lai accomplished his postdoctoral training at MIT and received his Ph.D. degree from a joint program of SUNY Stony Brook and Cold Spring Harbor Laboratory.

About OBI Pharma, Inc. 台灣浩鼎

OBI Pharma, Inc., was founded in 2002. Its focus is on the "Unmet Medical Needs" in challenging diseases throughout the world, such as Cancer & Infectious Diseases. OBI strives to improve health and the quality of life through innovative and cost-effective therapeutics. OBI's core competence is its R&D expertise in developing novel cancer and infectious disease therapies. The company has an exciting pipeline of products built on a ground-breaking carbohydrate synthesis discovery platform. OBI works in close collaboration with prestigious research institutes, including Academia Sinica of Taiwan and the Memorial Sloane-Kettering Cancer Center of the U.S..

Taiwan Focus II: Biotech in Taiwan

Po-Cheng Lin, Ph.D. 林珀丞博士

Associate General Manager
GWOXI
國璽幹細胞副總經理

Dr. Po-Cheng Lin is currently the Associate General Manager for GWOXI, and has worked at GWOXI since 2010. He was the Chief Technology Officer hired by GWOXI. He has considerable experience in regenerative medicine, cell biology (including stem cells and cancer cells) and molecular diagnostics. Recently, his work focused on translational medicine. At present, there are already a small molecule anti-cancer drug, a cord blood transplantation technology and two stem-cell new drugs had passed the TFDA IND inspection and received the Phase I clinical trial permission. He received a Ph.D. in biotechnology from the National Dong Hwa University in 2010, and an M.S. in life science from the National Chung Hsing University in 2004.

About GWOXI 國璽幹細胞

GWOXI 國璽幹細胞

GWOXI Stem Cell Applied Technology Co., Ltd. was established in 2004 on basis of its applied stem cell technology to innovate new applications in regenerative and preventive medicines, health products, health-examination platforms, and pharmaceutical research. Since stem cells are the major source of cell or tissue biogenesis, they bring hopes for diseases curing. Applied stem cell research is becoming the main stream of future pharmaceutical and therapeutic development. GWOXI has not only been cultivating in applied stem cell research for a long time, but also bringing together resources in industry, government, academics and medicine in hoping to benefit all human being to the most extend.

In 2010, GWOXI was granted for its "applied stem cell technology in treating cirrhosis/fibrosis" by National Science Council of Taiwan to establish a GTP-standard stem cell R&D center in Biomedical Science Park in Hsinchu Country. GWOXI then became one of government-support biotechnology and pharmaceutical companies after passing through the Act for the Development of Biotech and New Pharmaceuticals Industry under Industrial Development Bureau of Ministry of Economic Affairs in 2012.

Taiwan Focus II: Biotech in Taiwan

Tong-Young Lee, Ph.D. 李冬陽博士

Founder and CEO, Celtec Inc.
震泰生醫創辦人暨執行長

Dr. Lee is the CEO and Founder of Celtec Inc. which is a start-up company and focus on developing novel cellular immunotherapies based on next generation technology – universal linker platform. Their goal is to revolutionize medicine by re-engaging the body's immune system to treat cancer. Before Dr. Lee founded Celtec, he was the Vice President at Synovel Biosciences Inc. Synovel is using its proprietary class of drugs called ImmuEdit Aptamer TM to target several highly potential immune checkpoint drug targets for cancer treatment. In the meanwhile, he also served as a director at Fountain Biopharma Inc. which is an antibody drug discovery biotech company. Dr. Lee generated a largest fully-human antibody library and developed a first anti-IL6 monoclonal antibody in Asia Pacific area based on this technology platform. This project has gotten NT 40M government funding support. It is in preclinical stage and will get into human clinical trial in 2017. He is both inventor and project leader of this drug candidate. Before Dr. Lee joined Fountain Biopharma, he was working with late Dr. Judah Folkman at Harvard Medical School. Judah Folkman, M.D. (1933-2008), known as the father of angiogenesis research. Three angiogenesis inhibitors, bevacizumab (Avastin), ranibizumab (Lucentis) and ranibizumab (Eylea) were the first to be approved by the U.S. Food and Drug Administration and are now playing a major role in treatment.

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Taiwan Focus II: Biotech in Taiwan

Ajay Verma, M.D., Ph.D.

Chief Medical Officer, United Neuroscience

Ajay Verma is a neurologist who is devoted to the advancement of neurotherapeutics and neurodiagnostics. He studied zoology at the University of Maryland and received his M.D. and his Ph.D. in neurotoxicology from The Johns Hopkins University, training with Dr. Solomon Snyder. His neurology residency training was in the U.S. Army at Walter Reed Army Medical Center, where he remained on clinical staff for another 11 years. Ajay spent 12 years on the faculty of the Uniformed Services University of the Health Sciences, the U.S. Military's Medical School. Since leaving the Army as a Lt. Colonel in 2006, Ajay has served in leadership roles at Merck & Co., Inc., Novartis Pharmaceuticals, and Biogen where he directed drug development, biomarkers, and experimental medicine efforts in Alzheimer's and Parkinson's disease, ALS, neuropathic pain, multiple sclerosis and other brain and neuromuscular disorders.

About United Neuroscience

UNITED NEUROSCIENCE

United Neuroscience (UNS) is clinical stage biotech company pioneering a new class of medicines – endobody therapeutics – for neurological disorders. We are leveraging the industry's only fully synthetic, commercially-proven endobody technology platform to develop a pipeline of immunotherapeutics to protect human minds for future generations.

We envision a world where the incidence of Alzheimer's is cut in half by 2050, where neurodegenerative diseases are prophylactically eradicated from the world, and where UNS is a household name for brain health.

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行政院生醫產業創新推動方案

BIOMEDICAL DEVELOPMENT BOARD OF TAIWAN

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共同主席：科技部蘇芳慶政務次長 & 方威凱博士

- BDB will be the lead government agency for planning and executing strategies to enhance Taiwan's position as Asia-Pacific biomedical hub
- BDB design and deliver solutions that create value for investors and companies in Taiwan
- BDB's mission is to create sustainable biomedical growth with vibrant business and great job opportunities in Taiwan

Best Wishes for the Success of 2017 BTBA Symposium!

Taiwanese Association of America, Boston Chapter

波士頓台灣同鄉會

https://sites.google.com/site/taabostonorg/

Attendee List

First Name	Last Name	Chinese Name	Affiliation
Su Jing	Chan	陳淑晶	Massachusetts General Hospital
Chia-Yuan	Chang	張家源	NTU / CUMC
Chih-Ning	Chang	張至寧	Oregon State University
Chun-Ping	Chang	張君平	
Cindy	Chang	張新瑜	Harvard University
Dekuan	Chang	張德寬	Torque Therapeutics Inc.
Han-Wen	Chang	張涵雯	FCCC Temple University
Hsiao-Han	Chang	張筱涵	Harvard T.H. Chan School of Public Health
Kevin	Chang	張惇凱	Genentech Inc. USA
Nydia	Chang		Harvard University
Shaoyu	Chang	張劭聿	Life Science Nation
Shiao-Chi	Chang	張筱琦	Pfizer
Shu-Jung	Chang	張書蓉	Yale University
Tzu-Pei	Chang	張梓珮	Memorial Sloan Kettering Center
Wei-Cheng	Chang	張瑋晟	Berkeley
Wei-Ting	Chang	張瑋婷	Novartis
Wen-Hsuan	Chang	張文軒	Cornell University
Wenying	Chang	張文穎	
Ya-Ting	Chang	張雅婷	The Jackson Laboratory
Yu-Feng	Chang	張玉芳	Harvard Medical School
Yu-Yun (Marie)	Chang		New York City Hospital
Yueh-Ing	Chang	張月櫻	ILSI Taiwan
Amanda	Chao	趙芳筠	Northeastern University
Ling	Chao	趙玲	National Taiwan University
Kevin	Chau	周方正	Biogen
Shu-Miaw	Chaw	趙淑妙	Biodiversity Research Center, Academia Sinica
Chen-Hao	Chen	陳振豪	Harvard University
Cheng-Yi	Chen	陳政儀	Stowers Institute for Medical Research
Chi-Li	Chen	陳豈禮	C4 Therapeutics
Chia-Hui	Chen	陳家慧	Rutgers University
Ching-Huan	Chen	陳靖寰	
Chun-Hau	Chen	陳俊豪	BIDMC/Harvard
Daphne	Chen	陳玉潔	UNC School of Medicine - Gene Therapy Center
Geng-Yuan	Chen	陳耿元	Pennsylvania State University
Hsi-Ju (Sylvie)	Chen		UMass Medical School

First Name	Last Name	Chinese Name	Affiliation
Hsing-Yu (Warner)	Chen	陳星佑	Harvard Medical School
Huai-Chun	Chen	陳懷群	Commonwealth Informatics
Huei-Mei	Chen	陳慧美	Harvard University
Kuanwei	Chen	陳冠煒	Moderna Therapeutics
Ling-Wan	Chen		University of Pittsburgh
Ling-Wan	Chen	陳鈴宛	
Ming-Cheng	Chen	陳明正	University of Pittsburgh
Ming-Shuo	Chen	陳銘碩	Rutgers University
Po-Ju	Chen	陳柏如	University of Michigan
Po-Wei	Chen	陳柏維	Alexion Pharmaceuticals
Rose	Chen	陳幗珍	Education Division, TECO in Boston
Sheng-Hong	Chen	陳昇宏	Institute of Molecular Biology, Academia Sinica
Sheng-Wen	Chen	陳聖文	Aucta Pharmaceuticals
Tung-Cheng	Chen	陳東晟	Guest
Wei-Chiang	Chen	陳偉強	Biogen
Yen-Cheng	Chen	陳晏誠	Georgia Tech
Yen-Hua	Chen	陳彥樺	Weill Cornell Medical College
Yi-Ju	Chen	陳怡如	UPENN
Yi-Shan	Chen	陳怡珊	CRISPR Therapeutics
Ying-Chou	Chen		MIT
Ying-Ja (Inca)	Chen	陳映嘉	ACT Genomics 行動基因
Ying-Shiuan	Chen	陳盈璇	Texas A&M University (HSC-IBT)
Yu-Chuan	Chen	陳育詮	Novartis
Yu-Ju	Chen	陳玉如	Institute of Chemistry, Academia Sinica
Yun	Chen	陳昀	Johns Hopkins University
Huimin	Cheng	鄭慧閩	Columbia university
Victoria	Cheng	鄭洛宜	Northeastern University
Yung-Chih	Cheng	鄭永志	Boston Children's Hospital / Harvard Medical School
Edward	Chiang	蔣宗壬	Guest
Hao	Chiang	姜昊	Mass Eye and Ear
Ning	Chiang	姜寧	Rutgers University
Shian-Huey	Chiang	蔣先慧	Pfizer
Cheng-Hao	Chien	錢正浩	Tufts University
Chien-Ju	Chien	簡千茹	University of Maryland Baltimore
Ming-Shan	Chien	簡名珊	IFF
Darren	Chiu	邱建智	Harvard Medical School
Li-Ting	Chiu	邱力亭	
Ting-Wei	Chiu	邱亭瑋	Guest

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Chun-Yi	Cho	卓峻逸	Duke University
Bin-Kuan	Chou	周秉寬	Massachusetts General Hospital
Chia-Ching	Chou	周家慶	Abcam
Chun-An	Chou	周駿安	Northeastern University
Hui-Ting	Chou	周慧婷	Janelia Research Campus
Mei-Yin	Chou	周美吟	Institute of Atomic and Molecular Sciences, Academia Sinica
Shao-Pei	Chou	周韶霈	Cornell University
Tsui-Wen	Chou	周翠玟	New York University
Yi-Ying	Chou	周怡吟	Boston Children's Hospital
Yuting	Chou	周俞廷	MSKCC
Fang-Yi	Chu	朱芳儀	New York University
Kai Yun	Chuang	莊凱雲	GenScript
Tzu-Chien	Chuang	莊子謙	Regeneron
Wei-Lien	Chuang	莊維廉	Sanofi Clinical Diagnostics
Ya-Shan	Chuang	莊雅善	Cornell University
Hsiao-Ying	Chung	鐘曉音	
Jia-Ru	Chung		Mount Sinai
Jili	Chung	鐘基立	Sloan Fellows
Kun-Jui	Chung	鍾昆叡	Tamkang University
Yun-Shan	Chung	鍾昀珊	National Taiwan University
Evan	Hsu		
Chris	Fang	方威凱	Biomedical Development Board of Taiwan
Yi-Ya	Fang	方怡雅	NYU
Adam	Friedman		Leap Oncology
Christopher	Garris		Harvard/Massachusetts General Hospital
Kung-Hsien	Ho	何恭憲	Vanderbilt University
Li-Lun	Ho	何立倫	Brigham and Women's Hospital
Po-Yi	Ho	何柏毅	Harvard University
Jean	Hsiao	蕭靜如	BI
Li-Li	Hsiao	蕭俐俐	Brigham and Women's Hospital/Harvard Medical School
Shihchia	Hsiao	蕭世嘉	Acepodia
Stephanie	Hsiao	蕭晴文	Acepodia
Fu-Kai	Hsieh	謝富凱	MGH, Harvard Medical School
Hsiao-Wu	Hsieh	謝効吾	Novartis Institutes for Biomedical Research
I-Ni (Anny)	Hsieh	謝伊妮	Boston University School of Medicine
Wen-Chieh	Hsieh	謝文傑	Purdue University
Carolyn	Hsu	許翠玲	AbbVie Bioresearch Center
Chia (George)	Hsu	許加	University of Rochester Medical Cneter

First Name	Last Name	Chinese Name	Affiliation
Chia-Yu	Hsu	許家毓	UWEC
Michelle	Hsu	許立臻	Boston University
Peiyu	Hsu	許佩玉	APHA
ShihYao (Nathan)	Hsu		Takeda
Ya-Chieh	Hsu	許雅捷	Harvard University
Yu-Tien	Hsu	許祐恬	Harvard T.H. Chan School of Public Health
Ying-Chao	Hsueh	薛穎超	UMASS/MassBiologics
Hui-Lan	Hu	胡惠嵐	NYULMC
Zhuting	Hu	胡竹婷	Harvard / Dana-Farber Cancer Institute
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Annie	Huang	黃詩敏	
Ben	Huang	黃聖閔	Weill Cornell Medical College of Cornell University
Chieh-Yu (Kathy)	Huang	黃潔雨	Harvard University
Grace	Huang	黃奕帷	Temple University
Hao	Huang	黃皓	Princeton University
Hsin-Ting	Huang	黃歆婷	UMass-Amherst
Jun-Yuan	Huang	黃潤元	Boston University
Lin-Ya	Huang	黃麟雅	MIT
Ling-Yu	Huang	黃瓴伃	University of Georgia
Nai-Jia	Huang	黃乃家	MIT
Shih-Ting	Huang	黃詩庭	Emerson College
Tien-Chi	Huang	黃天祺	MRC LMS
Wei-En	Huang	黃薇恩	National Tsing Hua University
Weiting	Huang	黃瑋婷	Education Division, TECO in Boston
Yen-Pei	Huang		Safe Meadow
Yi-Jung	Huang	黃顗蓉	MGH
Yu-Chung	Huang		Boston Children's Hospital
Yu-Han	Huang	黃愈涵	Beth Israel Deaconess Medical Center
Yuan-Ping	Huang	黃元平	Lam Research
Yung-Chi	Huang	黃詠琪	MIT
Kuo-Chan	Hung	洪國展	SEAS Harvard
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Lily	Jan	葉公杼	University of California, San Francisco
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Sheng Chih	Jin	金聖智	Yale University School of Medicine
Julia	Joung		MIT and Harvard University
Lisa	Kang	康麗雪	Proteostasis Therapeutics
Yafen	Kang		

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Su-Mei	Kao	林素梅	Kao Preclinical Services
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Hsiao-Chen	Kuo	郭曉臻	Rutgers University
Taiyi	Kuo	郭岱穎	Columbia University
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Wei-Ting	Kuo	郭瑋庭	Harvard Medical School
Charchang	Lai	賴嘉章	Sanofi
Jiann-Jyh	Lai	賴建志	UMass Medical School
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Yu-Han	Lan	藍郁涵	Rutgers University-IR4
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Evelyn Yee Fun	Lee	李藝芬	Boston University
Hao-Chih	Lee	李浩志	MSSM
I-Ju	Lee	李以如	Dana-Farber Cancer Institute/HMS
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Tong-Young	Lee	李冬陽	Celtec Inc. 震泰生醫
Wan-Hung	Lee	李宛鴻	Indiana University
Yilin	Lee	李一霖	Bentley Univerisity
Yu-Ru	Lee	李育儒	BIDMC
Aileen	Li	李瑋薇	Harvard University
Jou-Hui	Li	李柔慧	Guest
Kun-Po	Li	李坤珀	
Pi-Chun	Li	李璧君	Dana Farber Cancer Institute, Harvard Medical School
Yi-Chen	Li	李亦宸	Harvard Medical School/BWH
Yong-Shi	Li	李勇賜	Columbia University
Chien-Sheng	Liao	廖建盛	Boston University

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Charng-Yu	Lin	林長育	Purdue Univeristy
Chia-Ching	Lin	林家靖	Baylor College of Medicine
Chiao-Feng	Lin	林嬌鳳	Partners Healthcare
Chih-Chung	Lin	林致中	Massachusetts General Hospital/Harvard
Chih-Li	Lin	林之立	Stony Brook University
Ching-Jung	Lin	林靖容	Weill Cornell Medicine/ Memorial Sloan Kettering Cancer Center
Chung-Yueh	Lin	林宗岳	MIT
Georgia	Lin	宣平	
Hank	Lin		Northeastern University
Hsiao-Yun	Lin	林曉筠	China Medical University
Hsin-Ti	Lin	林欣第	China Medical University
Hsiu-Ping	Lin	林修平	Icahn School of Medicine at Mount Sinai
Hui-Hsien	Lin	林慧賢	University of Massachusetts Amherst
Hui-Min	Lin	林蕙敏	Takeda Pharmaceutical
Hung-Ying	Lin	林鋐穎	Iowa State University
Li	Lin	林立	Tufts University
Michelle	Lin		CRISPR Therapeutics
Millicent	Lin	林文思	Tufts University
Pauline	Lin	林寶玉	Science and Technology Division, TECRO
Pei-Yi	Lin	林佩儀	Boston Children's Hospital
Po-Cheng	Lin	林珀丞	GWOXI 國璽幹細胞
Ray	Lin	林伯睿	OriGene Technologies Inc.
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Ying-Cing	Lin	林盈慶	Ragon Institute of MGH, MIT and Harvard
Ying-Jou (Agnes)	Lin	林穎柔	Bluebird Bio
Yuan-Ta	Lin	林遠達	MIT
Chia-Jen	Liu	劉嘉仁	Dana-Farber Cancer Institute

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Po-Ting	Liu	劉柏廷	Harvard University
Ta-Ming	Liu	劉大鳴	Eli Lilly
Yen Yu	Liu	劉晏瑜	Boston University
Chi-Wen	Lo	羅志文	University of Rochester
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Yen-Chun	Lu	盧彥君	Cornell University
Yi-Han	Lu	呂易翰	GaTech
Yu-Jung	Lu	呂雨蓉	UMass Medical School
Wendy	Lun	馮文鸞	Guest
Huey-Ming	Mak	麥惠明	Ginkgo Bioworks
Hsien-Wei (Yvonne)	Meng	孟憲薇	Merck
Yi-Li	Min	閔譯立	UT Southwestern Medical Center
Atsushi	Mizukami	水上温司	Takeda Pharmaceuticals International Co.
Steve	Mo	莫升元	UnitedHealth Group
Larry	Mortin		InnovaTID Pharmaceuticals Consulting
Cecilia	Ng	吳諾詩	Paraxel
Chun-Lun	Ni	倪群倫	Columbia University Medical Center
Anson	Peng	彭聲翔	Novartis
Kuan-Wei	Peng	彭冠為	Berg
Yi-Chieh	Perng	彭義傑	Washington University in St. Louis
Satinder S.	Rawat		UMass Medical School at Worcester
Robert	Rosenberg		S M C
Han-Wen	Shaw	蕭涵文	Academia Sinica
Zih-Jie	Shen	沈子傑	Weill Cornell Medicine
Ming-Che	Shih	施明哲	Academia Sinica
Ting-Yu	Shih	石庭宇	Harvard SEAS/Wyss Institute
Yu-Huan	Shih	施毓桓	UMass Medical School
I-Wen	Song	宋以文	Baylor College of Medicine
Hao-Wei	Su	蘇皓瑋	Fitbit
Pei-Yin	Su	蘇佩吟	Columbia University
Sheng-Chuan	Su	蘇聖荃	Elixirgen LLC
Wayne	Sun	孫維聲	Northeastern University
Jui-Cheng	Tai	戴瑞徵	MIT, Harvard Medical School, and Broad Institute
I-Li	Tan	譚怡麗	Weill Cornell/MSKCC

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Chi-Hse	Teng	鄧緝熙	Novartis
Kun-Yu	Teng	鄧焜譽	The Ohio State University
Chih-Feng	Tien	田至峰	Colorado State University
Yun-Chen (Erica)	Tien	田芸禎	
Andy	Tsai	蔡伯宜	
Chen-Wei	Tsai	蔡辰葳	Brandeis University
Chia-Ta	Tsai	蔡佳達	
HanChun (Jennifer)	Tsai		C4 Therapeutics
Hsien-Yi	Tsai	蔡賢奕	Eurofins / Merck
Kai-Cheng	Tsai	蔡鎧丞	Northeastern University
Kevin	Tsai	蔡松智	Duke University
Ming-Feng	Tsai	蔡鳴峰	Brandeis University
Pai-Chi	Tsai	蔡百騏	Harvard University
Pei-Yun	Tsai	蔡佩芸	Harvard University
Tsung-Huang	Tsai	蔡宗晃	VeroScience LLC
Yu-Chen (Tony)	Tsai	蔡宇承	Harvard Medical School
Hsien-Chung	Tseng	曾賢中	Manus Biosynthesis
Hung-Ming	Tseng	曾鴻銘	Guest
Wei Chou	Tseng	曾薇洲	Pfizer Inc.
Meng-Fu (Bryan)	Tsou	鄒孟甫	Memorial Sloan Kettering Cancer Center
Jamie	Tsung	曾宓	Momenta Pharmaceuticals, Inc
Ho-Chou	Tu	杜荷洲	Alnylam Pharmaceuticals
Te-Chen	Tzeng	曾德蓁	UMASS Medical School
Ajay	Verma		United Neuroscience
Raghuvir	Viswanatha	張龍慕	Harvard Medical School
Been	Wang	王本仁	Architectural Resources Cambridge
Chia-Ming	Wang	王家名	Northeastern University
Chih-Chieh	Wang	王志傑	BioLegend
Chih-Hao	Wang	王志豪	Harvard Medical School
Shu-Ping	Wang	王書品	Rockefeller University
Yiwen	Wang	王羿雯	Guest
Yun-Tzu	Wang	王韻智	Guest
Chun-Shu	Wei	魏群樹	UC San Diego
Chia-Ying (Margaret)	Wey	魏嘉英	Massachusetts General Hospital

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Jasin	Wong	翁嘉遜	Boston University
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Chi-Fang	Wu	吳綺芳	Novartis
Chia-Chien	Wu	巫佳謙	Brigham and Women's Hospital
Chia-Yen	Wu	吳佳燕	University of Pennsylvania
Chung-Yeh	Wu		Novartis Institutes for Biomedical Research
Chuni	Wu	吳俊毅	BWH
Connie	Wu	吳康妮	MIT
Hai-Yin	Wu	吳海茵	Harvard University
Hsin-Jung	Wu	吳欣蓉	University of Cincinnati
Hung-Yi	Wu	吳泓儀	Harvard University
I-Hsien	Wu	吳怡先	Joslin Diabetes Center
Leslie	Wu	吳佳璘	Sarepta Therapeutics
Lester	Wu	吳冠嶧	BU School of Medicine
Meng-Ju	Wu	吳孟儒	Purdue University
Ming-Ru	Wu	吳名儒	MIT
Shu-Pei	Wu	吳書沛	Vertex
Wen-Yi	Wu	吳玟誼	
Ru	Xiao		Schepens Eye Research Institute
Chih-Chao	Yang	楊智超	Vanderbilt University
Chih-Sheng	Yang	楊智勝	AbbVie
Han-Chieh	Yang	楊涵婕	NYU
Louis	Yang	楊錦宇	Novartis Institutes for Biomedical Research
Wei-Lei	Yang	楊偉磊	University of Texas MD Anderson Cancer Center
Joon Chong	Yee	余駿昌	Bristol-Myers Squibb
An-I	Yeh	葉安義	National Taiwan University
Hana	Yeh	葉怡君	Boston University
Jui-Hung (Jimmy)	Yen	顏瑞宏	Indiana University
Po-Jen (Will)	Yen	顏伯任	Voyager Therapeutics
Jia-Ray	Yu	余佳叡	HHMI / NYU Langone Medical Center
Tai-Yuan	Yu	尤泰元	Columbia University
CC	Yuan	袁之祺	Constellation Pharmaceuticals
Wei-Chien	Yuan	袁維謙	Boston Children's Hospital

Posters

Power-pitch presentations are marked with an asterisk (*)

Poster Board Number	Title and Presenter
1	**Pitx2- Mediated Skeletal Muscle Integrity and Metabolic Homeostasis** Chih-Ning Chang, Department of Pharmaceutical Sciences, College of Pharmacy, Oregon State University, Corvallis, OR 97331
2*	**Coordination between two branches of the unfolded protein response determines cell fate** Tsun-Kai Chang , Cancer Immunology, 2 Discovery Oncology, Genentech, Inc., 1 DNA Way, South San Francisco, CA 94080
3	**Using Surface Plasmon Resonance and Plasmon Waveguide Resonance to Study the Transport Behaviors of Cell Membrane Transporters** Ling Chao, National Taiwan University, Taipei, Taiwan
4	**Finding Their Way: Germ Cell Specification and Migration in an Ancient Animal, the Sea Anemone Nematostella vectensis** Cheng-Yi Chen, Stowers Institute for Medical Research, Kansas City, MO
5	**Contribution of kinesin-5 mediated microtubule stability to the regulation of mitotic spindle size** Geng-Yuan Chen, Department of Biomedical Engineering, Pennsylvania State University, University Park, PA
6	**AChRs are essential for the targeting of Rapsyn to the postsynaptic membrane of NMJs in living mice** Po-Ju Chen, Department of Molecular, Cellular, and Developmental Biology University of Michigan, Ann Arbor, MI 48109

Posters

Power-pitch presentations are marked with an asterisk (*)

Poster Board Number	Title and Presenter
7	**Autofluorescence Suppression by Optically Controlling Dark States of Photoswitchable Fluorescent Proteins on Commercial Confocal Microscopes** Yen-Cheng Chen, Department of Chemistry & Biochemistry and Petit Institute of Bioengineering and Bioscience, Georgia Institute of Technology, Atlanta, GA 30332
8	**Develop an ex vivo culture system and high throughput functional readouts for human islets** Yi-Ju Chen, Division of Gastroenterology, Department of Medicine, Abramson Family Cancer Research Institute
9*	**Randomized CRISPR-Cas transcriptional perturbation screening reveals novel protective genes against alpha-synuclein toxicity** Ying-Chou Chen, MIT Synthetic Biology Center, Massachusetts Institute of Technology, Cambridge, MA 02139
10*	**Modeling Painful Na-Channelopathies Using CRISPR/Cas9** Yung-Chih Cheng, F.M. Kirby Neurobiology Center, Boston Children's Hospital, Boston, MA 02115
11	**Membrane adaptor protein for a ubiquitin ligase is continuously recycled to maintain endosomal localization** Ya-Shan Chuang
12	**Tau is a key regulator of glucose-dependent MT destabilization in pancreatic beta cells** Kung-Hsien Ho, Department of Cell and Developmental Biology, Vanderbilt University, Nashville, TN 37240

Posters

Power-pitch presentations are marked with an asterisk (*)

Poster Board Number	Title and Presenter
13	**Therapeutic Application of Megakaryocytic Microparticles in Gene Delivery** Chen-Yuan Kao, Department of Chemical & Biomolecular Engineering, Delaware Biotechnology Institute, University of Delaware, Newark, DE
14	**An integrated epigenetic map of dedifferentiating β cells identifies shared features of β cell failure in humans and mice** Taiyi Kuo, Department of Medicine and Berrie Diabetes Center, Columbia University College of Physicians and Surgeons, New York, NY
15	**Modular recombinant protein domains: Rational designs for functional biomaterials** Charng-Yu Lin, Davidson School of Chemical Engineering, Purdue University, West Lafayette, IN 47907
16	**Alkaline ceramidase 1 (Acer1) protects mice from premature hair loss by maintaining the homeostasis of hair follicle stem cells** Chih-Li Lin , Department of Medicine, Stony Brook University, Stony Brook, NY
17	**Altered Circadian rhythms Are Associated with Cancer Progression** Hui-Hsien Lin, Department of Chemistry, University of Massachusetts, Amherst, MA
18	**eRD_GWAS reveals substantial contribution of genetic variation in the expression of transcription factors to phenotypic variation** Hung-Ying Lin, Department of Agronomy, Iowa State University, Ames, IA 50011-3650

Posters

Power-pitch presentations are marked with an asterisk (*)

Poster Board Number	Title and Presenter
19	**Hydrogel Formation with Self-Assembly Fibrous Coiled-Coil Protein** Che Fu Liu, Department of Chemical and Biomolecular Engineering, New York University Tandon School of Engineering, Brooklyn, NY
20	**Scalable organoid production and cryostorage using core-shell decoupled hydrogel capsules** Yen-Chun Lu , Department of Biological and Environmental Engineering, Cornell University, Ithaca, NY
21*	**Identification Of BET Bromodomain Inhibitors As Novel Antivirals Of Human Cytomegalovirus** Yi-Chieh Perng, Department of Medicine, Washington University in St. Louis
22*	**Argonaute CLIP defines a miR-122 targetome that correlates with liver pathology** Kun-yu Teng, Department of Pathology, Comprehensive Cancer Center, The Ohio State University, Columbus, OH
23	**Inter-organ communication: muscle aging driven by Cisd2 deficiency regulates the homeostasis of adipose tissues** Yuan-Chi Teng, Program in Molecular Medicine, National Yang-Ming University and Academia Sinica, Taiwan
24	**Context-Dependency of Human Immunodeficiency Virus Type 1 Protease Precursor Autoprocessing** ChihFeng Tien, Department of Biochemistry and Molecular Biology, Colorado State University, Fort Collins, CO

Posters

Power-pitch presentations are marked with an asterisk (*)

Poster Board Number	Title and Presenter
25	**Post-transcriptional regulation of SV40 viral gene expression and replication** Kevin Tsai, Department of Molecular Genetics & Microbiology and Center for Virology, Duke University Medical Center, Durham, NC
26	**The role of FAK in tumor microenvironment** Hsin-Jung Wu, Department of Cancer Biology, University of Cincinnati, Cincinnati, OH 45267
27*	**Allosteric Activation dictates Polycomb Repressive Complex 2 (PRC2) action on chromatin** Jia-Ray Yu, Howard Hughes Medical Institute, Department of Biochemistry and Molecular Pharmacology, New York University School of Medicine, New York, NY
28	**OBI Pharma**
29	**United Neuroscience**
30	**ACT Genomics**
31	**Dr. Sheng-Hong Chen's Laboratory, Academia Sinica, Taiwan**
32	**NTU Biogroup**
33	**TECRO**
34	**BioLegend**

Abstracts

Pitx2- Mediated Skeletal Muscle Integrity and Metabolic Homeostasis

Chih-Ning Chang[1,2], Arun J. Singh[1], Hsiao-Yen Ma[1], Kelli A. Lytle[3,4], Donald B. Jump[3,4], Jan F. Stevens[1, 4], Michael K. Gross[1], Chrissa Kioussi[1]

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Skeletal muscle is a major organ in glucose homeostasis and muscle atrophy leads to organ specific or systemic diseases, such as type-2 diabetes (T2D) associated with hyperglycemic state due to impairment in insulin production, release and/or tissue sensitivity. T2D, a worldwide epidemic is often accompanied by dysfunction of the energy control system including liver, fat and muscle. While the negative impact of insulin resistance on the metabolic health of skeletal muscle has been extensively investigated the molecular etiology still remains very poorly understood. We have generated a mouse line in which the homeodomain Pitx2 is ablated in skeletal muscle specifically under the influence of the muscle creatine kinase (*Pitx2*^{MCK}), develops advanced, untreated T2D over the course of a few weeks. The atrophying skeletal muscle was characterized with mitophagy induced protein breakdown and inability to use and store glucose that resulted to progressive loss of fast-twitch glycolytic muscle fibers, increased adiposity and glucose intolerance. Ablation of Pitx2 resulted in activation of the Foxo3-dependent autophagy and the PPARγ-dependent adipogenesis. Collectively these observations suggest that Pitx2 maintains muscle integrity and metabolic homeostasis by providing a molecular link for the establishment of the muscle fat axis.

Coordination between two branches of the unfolded protein response determines cell fate

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The kinases PERK and IRE1 alleviate endoplasmic reticulum (ER) stress by orchestrating the unfolded protein response (UPR). If stress mitigation fails, PERK promotes cell death by activating pro-apoptotic genes including death receptor 5 (DR5). Conversely, IRE1—which harbors both kinase and RNase modules—blocks apoptosis, through regulated IRE1-dependent decay (RIDD) of DR5 mRNA. Under irresolvable ER stress, PERK activity persists, whereas IRE1 paradoxically attenuates—by mechanisms that remain obscure. Here we report that PERK governs IRE1 attenuation, mediated by a phosphatase dubbed RPAP2 (RNA polymerase II-associated protein 2). RPAP2 curbs IRE1 phosphorylation, oligomerization and RNase activation. This disrupts IRE1-dependent generation of the cytoprotective transcription factor XBP1s and dampens ER-associated misfolded-protein degradation (ERAD). Furthermore, RPAP2 inhibits RIDD, enabling DR5-mediated apoptotic caspase activation. Thus, upon excessive ER stress, PERK attenuates IRE1 via RPAP2 to abort failed adaptation and trigger cell death.

Using Surface Plasmon Resonance and Plasmon Waveguide Resonance to Study the Transport Behaviors of Cell Membrane Transporters

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Studying species transport across cell membranes by membrane transporters is important for various biological applications. In this study, we developed a platform with both surface plasmon resonance (SPR) and plasmon waveguide resonance (PWR) phenomena to detect the concentration change of the target species across the cell membrane. We created sub-micron sized pore structure on the platform, in which the bottom surface is gold and the top surface is silica, and spanned a cell membrane patch over the pore. The process created a space inside the pore separated from the outside environment by a free-standing cell membrane for further studying the species transport across the membrane. The platform geometry allowed us to simultaneously monitor the refractive index change in the pore space, which is correlated to the target species concentration, and the refractive index change at the cell membrane region above the top silica surface, which is correlated to the ligand binding events occurring at the membrane surface. We are currently using this platform to monitor how various inhibitors or ligands could influence the transport dynamic of interested membrane transporters.

Finding Their Way: Germ Cell Specification and Migration in an Ancient Animal, the Sea Anemone *Nematostella vectensis*

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Multicellular animals are evolved from unicellular organisms. While unicellular eukaryotes have mitotic and meiotic potential in a single cell, animals sub-functionalized biological processes into diverged cell lineages. During animal development, cells segregate into somatic and germline fates. The germline cells are the only meiotic cells and responsible for inheritance of genetic information across generations. How multicellular organisms evolve mechanisms to delegate such important mission to certain cells is unknown. Studying evolutionary early branching animals, like sea anemone, may provide insights into the evolution of germ cell biology. By knocking down candidate signaling pathways, we found that downregulating Hedgehog pathway impairs sea anemone germ cell precursor formation during development. Besides, the germ cell precursors migrate from where they were specified into the future gonad tissue, where they mature into sperms or eggs. Such observation suggests that the sea anemone germ line niche is composed of two different cell populations, somatic and germ lineages. Because migratory germ cells and Hedgehog involvement in specification are both found in all other model animals, it is likely that these germ cell developmental mechanisms first appeared in the ancient common ancestors. Other sea anemone germline biology is await being explored to answer how is immortal germ line maintained during the infinite lifespan of the sea anemone.

Contribution of kinesin-5 mediated microtubule stability to the regulation of mitotic spindle size

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In addition to their capacity to slide apart antiparallel microtubules during spindle formation, the mitotic kinesin-5 motor Eg5 has been shown to pause at microtubule plus-ends and enhance microtubule polymerization (Chen and Hancock, Nature Comm. 2015:8160). This Eg5-induced microtubule stability and mitotic spindle integrity were eliminated by conventional loop-5 inhibitors, but enhanced by the rigor inhibitor BRD9876 (Chen *et al.*, ACS CB, in press). The goal of the present work is to understand the Eg5 microtubule polymerase mechanism by studying how the motor alters the lateral and longitudinal tubulin-tubulin interactions that stabilize the microtubule lattice. Transient kinetics and single-molecule tracking experiments demonstrate that dimeric Eg5 motors reside predominantly in a two-head-bound strong-binding state while stepping along the microtubule (Chen *et al.*, JBC 2016:291(39), 20283-94). When the motor pauses at a growing microtubule plus-end, the motor is hypothesized to act as a "staple" to stabilize the longitudinal bonds of incoming tubulin dimers. The on-rate for Eg5 binding to free tubulin is slow, suggesting that end-bound Eg5 motors do not bind free tubulin in solution; rather they stabilize incoming tubulin dimers that have bound to the plus-end.

Because tubulin in the microtubule lattice resides in a "straight" conformation, while free tubulin resides in a "kinked" conformation, an attractive model is that Eg5 stabilizes the straight conformation of tubulin. Consistent with this, monomeric Eg5 bound to the microtubule lattice stabilizes microtubules against depolymerization. Furthermore, the affinity of Eg5 for free tubulin is reduced in the presence of "wedge inhibitor" drugs that stabilize the kinked conformation of tubulin. Thus, we propose a microtubule polymerase mechanism in which Eg5 motor domains straighten tubulin to stabilize lateral tubulin-tubulin interfaces in the lattice, while the tethered head binds the incoming tubulin to stabilize longitudinal tubulin-tubulin bonds.

AChRs are essential for the targeting of Rapsyn to the postsynaptic membrane of NMJs in living mice

By

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ABSTRACT

Rapsyn, a 43 kDa scaffold protein, is required for the clustering of acetylcholine receptors (AChRs) at synaptic sites between mammalian motor neurons and muscle cells. However, the mechanism by which rapsyn is inserted and retained at postsynaptic sites at the neuromuscular junction (NMJ) *in vivo* remains largely unknown. We found that neither the N-terminal myristoylation nor the cysteine-rich RING H2 domain of rapsyn is required for its stable association with the postsynaptic membrane of NMJs. When N-myristoylation-defective rapsyn-EGFP mutant (G2A) and RING-H2 domain truncated rapsyn-EGFP were electroporated into sternomastoid muscles, a strong rapsyn fluorescent signal was selectively observed at synapses, similar to wildtype rapsyn-EGFP. The targeting of rapsyn-EGFP (wildtype and mutants) is independent of synaptic activity as they were inserted at denervated NMJs. However, when the coiled-coil domain (the AChR binding domain of rapsyn) is deleted, rapsyn fails to associate with AChRs at NMJs of living mice. In cultured myoblasts (in which AChRs are absent), myristoylated wildtype rapsyn mostly localizes to lysosomes, and is not associated with plasma membrane. However, in the presence of AChR subunits, rapsyn molecules were targeted to cell surface and formed aggregates with AChRs. The targeting of AChRs to the cell membrane, in contrast, does not require rapsyn as expressed AChRs are visible on cells membrane of rapsyn deficient myoblasts. These results provide evidence for an active role of AChRs in the targeting of rapsyn to the NMJ *in vivo*.

Autofluorescence Suppression by Optically Controlling Dark States of Photoswitchable Fluorescent Proteins on Commercial Confocal Microscopes

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The specificity and biocompatibility of fluorescent proteins (FPs) have revolutionized cellular imaging by providing multiple colors for investigating biological interactions *in vivo*. However, inhomogeneous autofluorescence limits the applications of FPs, resulting in false positive signals that obscure interactions of interest. The ability to optically control the photophysical, bright and dark states of photoswitchable fluorescent proteins (PS-FPs) provides an alternative means to avoid the background. For example, the bright state of the PS-FP rsFastLime is excited at 488nm and emits green fluorescence. After periods of emission, rsFastLime shuttles to a dark state, which can be depopulated by 405nm co-illumination. Since only rsFastLime fluorescence responds to both 405nm and 488nm lasers, single wavelength-generated autofluorescence background can be excluded.

We have developed synchronously amplified fluorescence image recovery (SAFIRe) microscopy, which involves modulating the intensity of both 488nm and 405nm lasers and extracting the signal shifted to the combinations of both laser modulation frequencies. We adapted SAFIRe to commercial fluorescence microscopes, including confocal spinning disk confocal microscope (PerkinElmer) and wide-field microscope (DeltaVision, GE). Since the visualization of relatively dim HIV-1 virus-like particles (VLPs) entry into cells suffers from a comparable autofluorescence background, we utilize rsFastLime with SAFIRe for background removal. In brief, the HIV-1 VLPs labeled with rsFastLime are illuminated with alternating 488nm and 405nm lasers. While only rsFastLime is photoactivated by a 405nm laser, the autofluorescence background shows no photoactivation. After one cycle of emission and photoactivation in ~0.5 second, SAFIRe recovers background-free VLP-rsFastLime signals in cells. This cell-type free method enables more reliable VLP tracking and general applications to investigate nanoparticles, drug delivery, and intracellular molecular events in pharmaceutical product development.

Develop an *ex vivo* culture system and high throughput functional readouts for human islets

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Current challenges in islet transplantation therapy include limited sources of human islets, and a lack of long-term culture condition to sustain islet physiology. An optimal condition for providing great quality and quantity of human islets is needed to overcome these challenges. In their native environment, islets are vascularized and surrounded by extracellular matrix, which provides both mechanical and biological supports for tissue structure and functionality. By merging biological techniques and bioengineering tools, we aim to generate a biomimetic system to sustain human islet physiology in a long-term culture. A critical aspect to study islet physiology *in vitro* is the ability to detect dynamic hormone secretion in response to different stimuli. Thus, we built a multi-channel perifusion system to simultaneously monitor insulin secretion and calcium influx fluorescence imaging in islets. The multi-channel chamber is designed for simple sample loading and real-time imaging analysis as well as high throughput readouts. With our multi-channel perifusion system, we successfully detected glucose-stimulated biphasic insulin secretion in human islets. With this assay system and a systematic approach, we identified an 3D culture condition, which can maintain both islet morphology and function up to 21 days.

Randomized CRISPR-Cas transcriptional perturbation screening reveals novel protective genes against alpha-synuclein toxicity

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Abstract

Targeted genetic screens in which libraries of CRISPR-Cas9 or RNAi that knockout, upregulate, or downregulate specific genes have been used to elucidate mechanisms underlying biological processes. These single-gene strategies enable one to focus on individual nodes in a regulatory network. However, they limit the global or combinatorial scale of genetic perturbations, which can be important for complex biological phenotypes, such as neurodegenerative disorders. The modulations required to counteract complex diseases may involve simultaneous or dynamic changes in the expression levels of many genes, which may not be accessible by targeted one-by-one genetic screens.

Here, we developed a complementary and distinct high-throughput screening platform called *PRISM* (Perturbing Regulatory Interactions by Synthetic Modulators). PRISM uses randomized CRISPR-Cas transcription factors (crisprTFs) that introduce global perturbations within transcriptional networks. We applied this technology to a yeast model of Parkinson's disease (PD) and identified guide RNAs (gRNAs) that modulate transcriptional networks and protect cells from alpha-synuclein (αSyn) toxicity. One of the gRNAs identified in this screen outperformed the most protective individual suppressors of αSyn toxicity, highlighting the power of global transcriptional network screening to identify modulators of important phenotypes. Global gene expression profiling revealed a substantial number of differentially modulated genes by this strong protective gRNA. These genes were validated to rescue yeast from αSyn toxicity when overexpressed. Human homologs of highly ranked hits were further verified in a human neuronal PD model to synergistically protect against αSyn-induced cell death. These results demonstrate that high-throughput and unbiased perturbation of transcriptional networks via randomized crisprTFs is an effective tool for studying complex biological phenotypes and discovering novel disease modulators.

Keywords: CRISPR screening, Parkinson's disease, alpha-synuclein, global transcriptional perturbations, synthetic transcription factors, PRISM (Perturbing Regulatory Interactions by Synthetic Modulators)

Modeling Painful Na-Channelopathies Using CRISPR/Cas9

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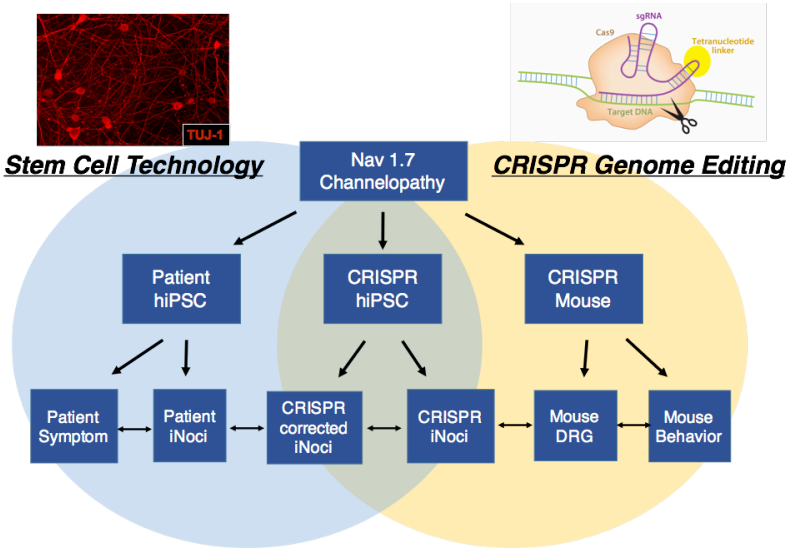
Pain is a critical adaptive sensation required for protection against danger and which facilitates healing after injury. However, when this system functions abnormally, pathological pain is generated. Mutations in ion channels expressed in sensory neurons have a major impact on pain sensibility. SCN9A which encodes Nav1.7 have been widely studied because it is the most abundant voltage-gated sodium channel in these "pain" sensory neurons. Gain-of-function (GOF) mutations in Nav1.7 lead to inherited erythromelalgia (IEM) and paroxysmal extreme pain disorder (PEPD), whereas loss of function (LOF) mutations cause congenital insensitivity to pain (CIP). Most studies investigating the pathophysiology of Nav1.7 mutations by overexpressing human channels heterologously in non-neuronal cells or in rodent sensory neurons *in vitro*, which limits translational implications. We have successfully exploited CRISPR/Cas9 genome editing to introduce GOF and LOF point mutations in the SCN9A to generate IEM, PEPD and CIP models *in vitro* (human induced sensory neurons) and *in vivo* (mutant mice). Nav1.7 GOF mutations in human iPSC induced sensory neurons dramatically increased spontaneous firing and burst firing rate in a temperature dependent manner as measured using multi-electrode arrays (MEA). For Nav1.7 LOF mutation, we have performed MEA and whole-cell patch clamp recording and observed less spontaneous firing (MEA), less Nav1.7 currents and an increased threshold to generate action potentials. These genetically engineered pain murine and human models not only enable us to mimic key features of the clinical presentation of the genetic pain disorder, but also provide a powerful tool to investigate pathophysiological mechanisms of the pain phenotype and to screen novel therapeutics for channelopathies.



Membrane adaptor protein for a ubiquitin ligase is continuously recycled to maintain endosomal localization

Ya-Shan Chuang

Abstract

Plasma membrane (PM) transporters for amino acids, sugars, and ions are critical for normal growth in all cells. The turnover of these transporters is typically regulated in response to a changing environment, such as nutrient supply or stress conditions. The mechanisms controlling intracellular trafficking of these transporters are highly conserved from fungi to mammals. Studies on yeast PM transporters have shown that ubiquitination is required for the proper targeting of these transporters to the vacuole (lysosome) for degradation. This modification largely relies on Rsp5, an E3 ubiquitin ligase of the Nedd4 HECT family. Rsp5 is recruited to these PM proteins via specific adaptors. Previous work from our lab has identified a family of proteins in yeast (ARTs, for arrestin-related trafficking adaptors) that target PM proteins for ubiquitination by recruiting Rsp5, resulting in the endocytosis and multivesicular body (MVB) sorting for delivery of these PM proteins into the vacuole lumen for degradation. However, there are also PM proteins, such as the iron transporter Ftr1 and the cell wall stress sensor Wsc1, which undergo ubiquitin-independent endocytosis but ubiquitin-dependent MVB sorting into the vacuole, suggesting the ubiquitination of these transporters occurs after endocytosis in the endosome. Presently, it is unclear how cargo ubiquitination at the endosome is regulated.

Ear1 is an Rsp5 adaptor located at the endosome and is known to be required for MVB sorting of the uracil transporter Fur4 and the iron transporter Sit1. The endosomal localization of Ear1 is therefore important for proper cargo ubiquitination at the endosome. Here we show that Ear1 recycles between the Golgi and endosome. The recycling sequence of Ear1 is contained in the cytosolic C-terminal domain. Subsequent truncation and mutagenesis led to the identification of two short peptide sequences which are required for endosomal localization of Ear1. Furthermore, Ear1 recycling is controlled by the retromer, a protein complex necessary for recycling transmembrane proteins between the Golgi and endosome. Our results indicate that the endosomal localization of Ear1 is tightly regulated, presumably for proper cargo ubiquitination at the endosome. Future work will focus on the effect of Ear1 recycling on Ear1 function at the endosome.

Title: Tau is a key regulator of glucose-dependent MT destabilization in pancreatic beta cells

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Abstract:
The homeostasis of blood glucose is regulated by beta cells in pancreatic Islets through the process called glucose-stimulated insulin secretion (GSIS). Impairment of GSIS results in prolonged high blood glucose, leading to diabetes. Our lab has previously shown that microtubules (MTs) in beta cells negatively regulate GSIS. In resting conditions, MTs facilitate the transportation of cytoplasmic insulin vesicles away from the plasma membrane to restrict the readily releasable pool of insulin, whereas high glucose stimulations destabilize MTs and enhance GSIS. This mechanism is important for beta cells to maintain thousands of insulin vesicles in the cytoplasm and to sustain the robust secretion capacity. By using photoconvertible fluorescent protein-tagged tubulin to directly measure MT disassembly in beta cells, I found that the timing and dynamics of the glucose-dependent MT destabilization matches the temporal profiling of GSIS. The stability of MTs is regulated by microtubule associated proteins (MAPs). Interestingly, I found that the regulation of the MT-stabilizing MAP, Tau is correlated to the glucose-dependent MT dynamics in beta cells. After high glucose stimulations, Tau is hyperphosphorylated and dissociation from MTs, whereas inhibiting a major Tau kinase, GSK3β, abolishes this response. These results suggest that Tau may play a vital role in regulating the glucose-dependent MT dynamics in beta cells to fine-tune GSIS and glucose homeostasis. Tau is critical for neuronal functions and is involved in the pathology of Alzheimer's disease (AD). It has been documented that diabetic patients have up to four times high risk of AD than non-diabetic; however, the molecular mechanism behind this strong correlation is unclear. My preliminary results that the regulation of Tau phosphorylation is coupled to glucose metabolism will provide insights into understanding the molecular connection between diabetes and AD.

Therapeutic Application of Megakaryocytic Microparticles in Gene Delivery

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Cell-derived microparticles (MPs) are small vesicles range from 0.1 to 1 μm in size, budding from plasma membrane under stimulated or active condition (Cocucci et al., 2009). These MPs have been shown playing an important role in intercellular communication and are able to transfer various signaling molecules such as RNA, lipid and protein from cell to cell. Among different MPs, megakaryocytic MPs (MkMPs) are the most abundant MP in circulation (Flaumenhaft et al., 2009). We have shown that, *in vitro*, MkMPs were able to specifically target and uptaken by hematopoietic stem/progenitor cells (HSPCs) via fusion or endocytosis (Jiang et al., 2017). These MkMPs further induced and promoted megakaryocytic differentiation of HSPCs without any supplemented cytokine (Jiang et al., 2014), indicating the ability of MkMPs to transfer material to HSPCs and perform biological effects. In this study, we aim to develop a protocol for using MkMPs as vesicles for DNA/RNA delivery. We will describe the process of exogenous loading of DNA/RNA into MkMPs, and the delivery of these materials to HSPCs *in vitro*. The efficiency in loading and delivery process will be shown by various aspects, including DNA/RNA quantification and visualization via confocal/super-resolution microscopy. Furthermore, we will describe the biological effect of plasmid DNA responsible for GFP expression and siRNA for gene knock-down through the MkMP delivery system. Overall, the targeting characteristic of MkMPs to HSPCs and the development of cargo loading and delivery shed light on the application in therapeutic delivery system and cell therapy.

References:

Cocucci, E., Racchetti, G., and Meldolesi, J. (2009). Shedding microvesicles: artefacts no more. Trends Cell Biol *19*, 43-51.

Flaumenhaft, R., Dilks, J.R., Richardson, J., Alden, E., Patel-Hett, S.R., Battinelli, E., Klement, G.L., Sola-Visner, M., and Italiano, J.E., Jr. (2009). Megakaryocyte-derived microparticles: direct visualization and distinction from platelet-derived microparticles. Blood *113*, 1112-1121.

Jiang, J., Kao, C., and Papoutsakis, E.T. (2017). How do megakaryocytic microparticles target and deliver cargo to alter the fate of hematopoietic stem cells? Journal of Controlled Release *247*, 1-18.

Jiang, J., Woulfe, D.S., and Papoutsakis, E.T. (2014). Shear enhances thrombopoiesis and formation of microparticles that induce megakaryocytic differentiation of stem cells. Blood *124*, 2094-2103.

An integrated epigenetic map of dedifferentiating β cells identifies shared features of β cell failure in humans and mice

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Abstract

Diabetic β cell failure is associated with β cell dedifferentiation. Here, we integrated genome-wide histone modification and transcriptome data from chemically sorted β cells of multiparity-induced diabetic mice to identify effectors of dedifferentiation, and their shared features in humans. Diabetic β cells demonstrate skewed Hnf4α and Pax6 enhancer selection, conserved bivalent histone characteristic of human endocrine progenitors, activation of α cell signature genes, and silencing of the insulin genes. Finally, we detected combined alterations of histone marks and transcript levels encoding C2cd4a, a human type 2 diabetes susceptibility gene across multiple ethnic groups, as a common effector of β cell failure in humans and mice.

Modular recombinant protein domains: Rational designs for functional biomaterials

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Recombinant protein domains are useful to confer specific functions to engineered biomaterials. A wide variety of modular protein domains have been identified with different functionalities including bioactivity, protein-protein/DNA interactions, and structural integrity. Here we developed recombinant protein-based materials for applications in tissue engineering.

Potent cell is a key aspect in tissue engineering, and cellular potency is regulated by epigenetics. We were interested in detecting sequence-specific CpG methylation levels. We developed a set of recombinant protein probes based on methyl-CpG-binding domain (MBD) and transcription activator like effector (TALE). The MBD domain provides the probe set the specificity to detect CpG methylation, while the TALE domain determines the detection spot along the DNA sequence. The probe set reports the CpG methylation near the sequence-of-interest through bimolecular fluorescence complementation (BiFC) which can be easily visualized by fluorescent microscopy. We showed the developed probe can detect drug-induced decrease in methylation near telomere in a model cell line HEK293T.

A scaffold in tissue engineering provides a microenvironment to guide cell behavior. Ideally, the material for the scaffold should be responsive to dynamic cellular activities and changes in environmental conditions. Elastin-like polypeptides (ELPs) are widely used modular domains for such responsive materials. ELPs are derived from elastin found in connective tissue and are known for its temperature responsiveness. We developed a family of ELP-based proteins to study how extrinsic modular domains will affect the pH-sensitivity in the temperature responsiveness of ELP domains Our results showed that the charge behavior of extrinsic sequences can be used to fine tune the temperature responsiveness of charged ELPs.

Title

Alkaline ceramidase 1 (Acer1) protects mice from premature hair loss by maintaining the homeostasis of hair follicle stem cells

Author List

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Summary

Ceramides and their metabolites are important for the homeostasis of the epidermis, but much remains unknown about what are the roles of specific pathways of ceramide metabolism in skin biology. With a mouse model deficient in the alkaline ceramidase (Acer1) gene, we demonstrate that Acer1 plays a key role in the homeostasis of the epidermis and its appendages by controlling the metabolism of ceramides. Loss of Acer1 elevated the levels of various ceramides and sphingoid bases in the skin and caused progressive hair loss in mice. Mechanistic studies revealed that loss of Acer1 widened follicular infundibulum and caused progressive loss of hair follicular stem cells. These results suggest that Acer1 plays a key role in maintaining the homeostasis of epidermal stem cells and thereby the hair follicle structure and function by regulating the metabolism of ceramides in the epidermis.

Altered Circadian rhythms Are Associated with Cancer Progression

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Circadian rhythms are time-dependent systems that control multiple functions in the human body. Alterations in circadian rhythms can have profound impacts on human health. Both epidemiological analyses and animal studies have revealed that disruptions of circadian rhythms are important factors that contribute to cancer development. However, prior molecular studies have only approximated this relationship via overexpression or deletion of circadian genes, and assessed average points. The association between cancer and altered circadian rhythms at the cellular level is still not well understood. In the present work, chemical and biological methods were used to elucidate the connection between altered circadian rhythms and cancer. Luciferase reporter constructs were used to track the expression patterns of the core clock proteins, BMAL1 and PER2. Lentiviral transfection was performed with the MCF10 series of breast cancer cell lines, which represent different stages of the disease. Both transcriptional and translational activities of BMAL1 and PER2 were measured via qRT-PCR and real-time luminometry. We found that the both mRNA and protein expression patterns of BMAL1, which has been proposed to be a tumor suppressor, changed with increasing cancer progression. Surprisingly, PER2, another well-known tumor suppressor, remained the same patterns across different cancer stages. To the best of our knowledge, we are the first group to study the dynamic circadian patterns and their changes through different stages of breast cancer. By correlating circadian rhythm with cancer severity, we will be able to offer significant insight to this devastating disease, leading to improved means for prevention, and the development of new drugs and targets.

eRD_GWAS reveals substantial contribution of genetic variation in the expression of transcription factors to phenotypic variation

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ABSTRACT

Background: There are significant limitations in existing methods for the genome-wide identification of genes whose expression patterns affect traits.
Results: The transcriptomes of five tissues were deeply sequenced from 27 genetically diverse maize inbred lines to identify genes that exhibit high and low levels of variation in expression across tissues or across genotypes. Transcription factors (TFs) were enriched among genes with the most variation in expression across tissues and among genes with higher than median levels of variation in expression across genotypes. In contrast, TFs were depleted among genes whose expression was highly stable or highly variable across genotypes. Next, we developed a Bayesian-based method of conducting genome-wide association study in which RNA-seq-based measures of transcript accumulation are the explanatory variables (eRD_GWAS). The ability of eRD_GWAS to identify true associations between variation in gene expression and diversity in phenotype were supported by the enrichment of eRD_GWAS genes within specific nodes of RNA co-expression networks, protein-protein interaction networks, and gene regulatory networks. Using a panel of 369 maize inbreds genes associated with 13 traits were identified via eRD_GWAS. Predicted functions of many of the resulting trait-associated genes were consistent with the analyzed traits. Importantly, TFs were significantly enriched among trait-associated genes identified via eRD_GWAS.
Conclusions: eRD_GWAS is a powerful tool for associating genes with traits and is complementary to SNP-based GWAS. The results of our eRD_GWAS are consistent with the hypothesis that genetic variation in the expression of TFs contributes substantially to phenotypic diversity.

Hydrogel Formation with Self-Assembly Fibrous Coiled-Coil Protein

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Protein-based hydrogels are known for their biocompatibility and biodegradability, as well as their high water content and tunable viscoelasticity, which allow them to be used as injectable biomaterials. The N-terminus of the Cartilage Oligomeric Matrix Protein, COMPcc, is a pentameric coiled-coil motif with an axial hydrophobic pore for binding a variety of small molecules such as doxorubicin, vitamin A, vitamin D, and curcumin. Our group has engineered a mutant of this domain dubbed Q, which maintains patches of positive and negative surface charges, allowing the protein to self-assemble into nanofibers. After native purification of Q at pH 8, it assembles into a hydrogel with a concentration as low as 1mM at 4C within just 36 hours. ATR-FTIR studies confirms that the coiled-coil secondary structure of the Q-hydrogel is comparable to that of chemically crosslinked Q mesofibers. These findings suggest that Q may serve as spontaneously forming hydrogels for applications including drug delivery and tissue engineering.

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Scalable organoid production and cryostorage using core-shell decoupled hydrogel capsules

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Organoids have recently emerged as an important system for stem cell biology studies and organ development of potential therapeutics. These "mini-organs" not only provide a convenient in vitro platform to model Organ development including various pathologies study but also hold exciting potential for organ/tissue replacement therapies. In almost all cases, the 3D culture in extracellular matrices, such as Matrigel played an essential role in the organoid formation. Current 3D cultures are typically done by embedding the cells in Matrigel usually deposited as sessile drops on flat surfaces. While these culture methods enabled numerous insightful studies in laboratories, they were not suited for large-scale productions. On the one hand, the culture requires manual seeding and becomes labor-intense when performed at large scales; on the other hand, the macroscopic Matrigel drops have limited surface area for mass transfer and are not suitable for suspension. The scale-up of organoid culture that is essential for high throughput screening and clinical applications has remained challenging. Here, by using our recently developed hydrogel capsule-based 3D tissue culture method, we propose to develop an efficient and scalable organoid culture system. The capsules have a core-shell structure where the core consists of Matrigel that supports the growth of organoids, and the shell is alginate that forms robust spherical capsules, enabling suspension culture by protecting encapsulated cells from the shell layer. Compared with conventional culture in Matrigel, the capsules have a much higher surface-to-volume ratio for mass transfer and can be produced continuously by a two-fluidic electrostatic co-spraying. Also, these capsules provide protection from destructive force by crystal formation in cryopreservation. Furthermore, the organoid within a physical confinement would enhance its stemness and proliferation which are two key factors to expand organoids in a high efficiency.

Title: **I**dentification **O**f **B**ET **B**romodomain **I**nhibitors **A**s **N**ovel **A**ntivirals **O**f **H**uman **C**ytomegalovirus

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Human CMV is a widespread opportunistic pathogen and established lifelong infections in 50-80% of adults in United States. Even though human CMV infection is usually asymptomatic, it acts as an opportunistic pathogen and is a major cause of morbidity and mortality in immunocompromised individuals, including transplant recipients and AIDS/HIV patients. A limited number of drugs are licensed for the treatment of CMV infection and no vaccine is available. However, current CMV therapeutics are problematic. Therefore, the development of new anti-CMV therapeutics focusing on a novel mechanism is of critical important.

To address the unmet need of CMV therapeutics, we explored the molecular mechanisms of CMV transcription to explore potential antiviral targets. Targeting a host protein instead of a viral one reduces the chance of a drug-resistant virus emerging. We identified BET bromodomain proteins, human epigenetic readers, as a potential novel target. Small molecule inhibitors of BET bromodomain proteins (iBETs) are the next-generation of epigenetic-based therapeutics being developed by pharmaceutical companies for cancers, cardiovascular diseases, inflammatory diseases, and male contraception. However, the anti-viral potentials of iBETs against CMV infection have never been tested. Using an *in vitro* cell culture system, we found that iBETs effectively inhibit viral infections of both human CMV and murine CMV, the mouse homolog of human CMV, at concentrations that have no known toxicities. Further characterization further revealed that iBETs could elicit anti-viral activities *in vivo*. Our preliminary studies identifying iBETs as an exciting new class of potential anti-CMV therapies.

Title: Argonaute CLIP defines a miR-122 targetome that correlates with liver pathology

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Abstract

MicroRNA-122, an abundant and conserved liver-specific miRNA, regulates hepatic metabolism and functions as a tumor suppressor, yet systematic and direct biochemical elucidation of the miR-122 target network remains incomplete. To this end, we performed Argonaute crosslinking immunoprecipitation (Ago-CLIP) sequencing in miR-122 knockout and control mouse livers, as well as in matched human hepatocellular carcinoma (HCC) and benign liver tissue to identify miRNA target sites transcriptome-wide in two species. We observed a majority of miR-122 binding on 3'-UTRs and coding exons followed by extensive binding to other genic and non-genic sites. Motif analysis of miR-122 dependent binding revealed a novel G-bulged motif in addition to canonical motifs. A large number of miR-122 targets were found to be species-specific. Identification of several common mouse and human targets, most notably BCL9, predicted survival in HCC patients. Our analysis is further supported by the repression of the downstream targets of Wnt signaling using CRISPR technology to double knockout miR-122 and BCL9. Restore BCL9 expression in the double knockout cells significantly increases cell proliferation. These results broadly define the molecular consequences of miR-122 downregulation in hepatocellular carcinoma.

Inter-organ communication: muscle aging driven by Cisd2 deficiency regulates the homeostasis of adipose tissues

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During aging process, functional decline in distinct tissues may have different outcomes on the systemic regulation. Accumulating evidence suggested that muscles are central tissues to coordinate organism-wide processes including aging and metabolic homeostasis. To test the hypothesis, we created tissue-specific knockout (KO) mice of Cisd2 gene, which encodes a mitochondrial outer membrane protein mediating mitochondrial integrity and aging in mammals, to drive specific cell degeneration in different tissues, including neurons, skeletal muscle and adipose tissues. Our result revealed that the Cisd2 muscle-specific KO (mKO) mice phenotypically copied the systematic Cisd2 KO mice; both mouse models exhibit a systemic aging phenotypes. Intriguingly, a genetically rescue mouse model partially restored the organism-wide aging phenotypes of Cisd2 KO mice, especially the adipose atrophy. These results showed that muscle degeneration has a profound effect on non-muscle tissues. On the other hand, we also identified myokines regulating a muscle-adipose crosstalk, were up-regulated in the degenerating skeletal muscles of the Cisd2 KO and mKO mice. In summary, our mouse study revealed that skeletal muscles play an important role to coordinate organism-wide processes and that muscle degeneration seems to have a profound effect on the homeostasis of adipose tissues.

Context-Dependency of Human Immunodeficiency Virus Type 1 Protease Precursor Autoprocessing

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The HIV-1 protease (PR) is initially synthesized as part of the Gag-Pol polyprotein precursor in the infected cell. Precursor autoproteolysis results in liberation of free, mature PR. We previously established a cell-based model system to examine the precursor autoprocessing mechanism using engineered fusion precursors carrying the p6*-PR miniprecursor sandwiched between various tags. We here report that precursor autoprocessing is context-dependent as its activity and products are modulated by different sequences upstream of p6*-PR. This was manifested by the 26aa maltose binding protein (MBP) signal peptide (SigP) when placed at the N-terminus of fusion precursors. The mature PRs released from the precursors lacking SigP were rapidly self-degraded whereas the PRs released from SigP-containing fusion precursors were resistant to self-degradation. A H69D mutation in PR completely abolished autoprocessing of SigP-containing fusion precursors whereas it only partially suppressed autoprocessing of the H69D-carrying precursors when SigP was absent or altered (Huang et al., 2010; Huang et al., 2011). Fusion precursors carrying a multi-drug-resistant PR sequence or a substitution at the P1 position identified from clinical isolates also demonstrated different autoprocessing outcomes with or without SigP (Watanabe et al., 2016). Furthermore, the SigP appeared to modulate precursor autoprocessing in a way like a NL4-3 derived proviral construct. In transfected HeLa cells, a GFP fusion precursor (D25N) with SigP at the N-terminus exhibited a subcellular distribution pattern distinct from one without it. This finding reveals additional regulation complexity on precursor autoprocessing.

Reference:
Huang, L., A. Hall, and C. Chen. 2010. Cysteine 95 and other residues influence the regulatory effects of Histidine 69 mutations on Human Immunodeficiency Virus Type 1 protease autoprocessing. Retrovirology 7:24.
Huang, L., Y. Li, and C. Chen. 2011. Flexible catalytic site conformations implicated in modulation of HIV-1 protease autoprocessing reactions. Retrovirology 8:79.
Watanabe SM, Simon V, Durham ND, Kemp BR, Machihara S, Kemal KS, Shi B, Foley B, Li H, Chen BK, Weiser B, Burger H, Anastos K, Chen C, Carter CA. 2016. The HIV-1 late domain-2 S_{40}A polymorphism in antiretroviral (or ART)-exposed individuals influences protease inhibitor susceptibility. Retrovirology 13:64.

Post-transcriptional regulation of SV40 viral gene expression and replication

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Covalent modifications on mRNA transcripts have long been known, potentially adding an additional layer of gene regulation between transcription and translation; however how these modifications affect RNA biology remains enigmatic and controversial. Methylation on the N6 position of adenosine (N^6 methyladenosine, m6A) is the most abundant RNA modification, and has recently been implicated to regulate mRNA splicing, stability, translation, and structure[1]. Our lab has recently found m6A to be exploited to enhance the infections of HIV-1 and Influenza A virus (IAV) [2,3]. Here, we report the mapping of m6A modifications on the viral transcripts of the simian polyomavirus, SV40. Two clusters of m6A sites were mapped to the early transcript encoding T antigens, while 12 clusters were found on the structural protein encoding late transcripts. Synonymous mutations introduced at the identified m6A sites revealed that m6A modifications enhanced the expression of the major capsid protein VP1 two-fold, in turn enhancing viral replication. In agreement with this, we have found the methylation inhibitor drug 3-Deazaadenosine to have an inhibitory effect on SV40 replication. This study further enhances our understanding of how post-transcriptional mRNA modifications may affect viral infections, and potentially implicates new routes of interventions in related human polyomavirus infections such as that of JC and BK virus.

1. Li S, Mason CE (2014) The pivotal regulatory landscape of RNA modifications. Annu Rev Genomics Hum Genet 15: 127–150.

2. Kennedy EM, Bogerd HP, Kornepati AVR, Kang D, Ghoshal D, et al. (2016) Posttranscriptional m(6)A Editing of HIV-1 mRNAs Enhances Viral Gene Expression. Cell Host Microbe 19: 675–685.

3. Courtney DG, Kennedy EM, Bogerd HP, Tsai K, Heaton NS, et al. (n.d.) Epitranscriptomic enhancement of influenza A virus gene expression and replication. Cell Host Microbe. *Under review.*

The role of FAK in tumor microenvironment

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Metastasis is an inefficient multi-step process requiring the disseminated tumor cell to adapt and survive at a foreign microenvironment in distant tissues. During the process, intercellular communication is critical, especially between tumor cells and the surrounding tumor microenvironment, to create a tumor-favoring niche that allows tumor growth and colonization. Over the past decade, much effort has been made to shed light on the pivotal role of the tumor microenvironment on tumor progression, including endothelial cells, immune cells and fibroblasts. Focal adhesion kinase (FAK) is a tyrosine kinase important in mediating tumor progression and metastasis. FAK overexpression in breast cancer specimens is often correlated with poor prognosis. Extensive studies using conditional FAK knockout mouse models revealed a critical role for FAK in mammary cancer initiation, progression and metastasis. Recently, tumor FAK has been implicated in creating an immune suppressive tumor microenvironment through inflammatory chemokine production and tumor-associated regulatory T cells (Tregs) recruitment. However, in contrast to the wealth knowledge of FAK in primary tumor cells, much less has been addressed in tumor stroma, other then it is a well-known regulator for tumor angiogenesis. Interestingly, our lab had observed a concomitant increase of FAK activity in cancer-associated fibroblasts (CAFs). We also found that conditioned medium derived from highly metastatic human MDA-231 breast cancer cells was sufficient to induce CAF markers expression on treated fibroblasts, and expand the metastatic capacity by promoting tumor cell migration, implicating an equivalent importance of FAK in CAFs to prime tumor microenvironments. Moreover, we found there are differences between CAFs with and without FAK with regards to their influence on tumor cell migration and cancer metastasis *in vitro* and *in vivo*, respectively. Therefore, we hypothesized that, rather than directly driving cancer cell malignancy *per se*, FAK also promotes cancer metastasis via induction of CAFs activities. Such inductions may promote intercellular communication between CAFs and tumor cells to horizontally transfer oncogenic information through extracellular microvesicle, or exosome trafficking. In addition, FAK activation in CAFs may also induce metastasis through affecting pro-inflammatory cytokine release and immune cells recruitment. Taken together, these data suggest a potential role of stromal FAK in creating a pro-tumorigenic microenvironment for breast cancer development and progression, and provide further rationale in therapeutic benefits of FAK inhibition against various solid tumors.

Allosteric Activation dictates Polycomb Repressive Complex 2 (PRC2) action on chromatin

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Polycomb Repressive Complex 2 (PRC2) is the methyltransferase that catalyzes methylation of histone H3 at Lysine 27 (H3K27), associated with repressive chromatin domains and gene silencing. PRC2 core complex consists of four subunits: EZH2, EED, SUZ12, and RbAp48. EZH2 is the enzymatic core that catalyzes mono-, di-, and tri-methylation of H3K27 via its SET domain, and subsequently, its catalytic product H3K27me3 in turn stimulates PRC2 activity through binding to EED, potentiating a positive feedback mechanism. Although PRC2 containing EED mutants defective of H3K27me3 binding manifested largely reduced activity, the dynamics involving other subunits during the activation of PRC2 still remained elusive.

Our recent structural work in collaboration with the Gamblin Group has implicated that during H3K27me3-potentiated activation of PRC2, the SRM domain of EZH2 underwent allosteric remodeling to stabilize the SET domain and optimize its enzymatic activity. In this study, we identified mutations within the SRM domain selectively abrogate the allosteric activation of PRC2. The EZH2-SRM mutants, while remaining similar basal level activity compared to wildtype EZH2 *in vitro*, do not respond to the stimulation of H3K27me3, thereby abolishing the positive feedback. Surprisingly, these mutants, while harboring *in vitro* basal activity, manifested no activity *in vivo*, indicating that allosteric activation dictates PRC2 function in the context of chromatin. Although being activation-deficient, PRC2 containing EZH2-SRM mutants remained a similar pattern of chromatin deposition compared to wildtype PRC2, revealing that PRC2 activity is uncoupled from its spatial regulation on chromatin. We further demonstrated that the activation-deficient SRM mutations override and suppress the cancer-associated gain-of-function mutations at Y646 of EZH2 by epistasis experiments *in vitro* and *in vivo*. Consistently, the alpha-helix mimetics designated to target the SRM domain showed a selective inhibition of PRC2 allosteric activation. These results unveiled critical implications in the biology of PRC2 and enlightened an alternative possibility for therapeutic interventions against PRC2-addicted cancers by targeting its allosteric activation.