DAYS OF MOLECULAR MEDICINE 2018

The Emerging Asian Epidemic: Cancer and Heart Disease

Hong Kong, March 1-2, 2018

Organized by:

Days of Molecular Medicine Global Foundation

Karolinska Institutet

FONDATION IPSEN

香 港 大 學
THE UNIVERSITY OF HONG KONG

DAYS OF MOLECULAR MEDICINE 2018

THE EMERGING ASIAN EPIDEMIC: CANCER AND HEART DISEASE

Hong Kong, March 1-2, 2018

Organized by:

Days of Molecular Medicine Global Foundation

Karolinska Institutet

FONDATION IPSEN

香 港 大 學
THE UNIVERSITY OF HONG KONG

CONTENTS

WELCOME

Dear Participant,

On behalf of the Organizing Committee for DMM 2018, we would like to welcome you to Hong Kong for the DMM Symposium on:

The Emerging Asian Epidemic: Cancer and Heart Disease

The first DMM was held at the Salk Institute in 2000, headlined by several Nobel laureates (Mike Brown, Joe Goldstein, Eric Kandel, and Lee Hartwell), all of whom are physician-scientists, which launched the reputation of this series during the past two decades. In addition, this inaugural meeting integrated cutting edge presentations from private foundations and the biotechnology sector, including presentations from Christopher Reeve (The Reeve Foundation) and Art Levinson (Genentech), respectively. The goal of the initial DMM was to highlight the importance of partnerships between academia, non-profit foundations, and the private sector to advance human health based on three core principles: science, science, and science.

The current agenda for DMM 2018 continues this tradition, and we are extremely grateful to the participants, both speakers and chairs, that have agreed to participate in this year's meeting. This topic is not only timely, but particularly meaningful to our DMM Global Foundation. Having lived in China over a decade ago, I have a special place in my own heart for this part of Asia. I have met multiple children with CHD in my volunteer work and have had many students affected by the issues we will discuss over the next two days. I am not only personally appreciative for the participation of the speakers and chairs of DMM 2018, but also for their dedication to further scientific and therapeutic benefit for the lives of many.

Finally, this meeting would not have been possible without the scientific and organizational input of our colleagues from The University of Hong Kong, Karolinska Institutet, and Fondation IPSEN. We would like to acknowledge the generous support of our sponsors, Fondation IPSEN, Bactiguard, The Croucher Foundation, The University of Hong Kong, The Karolinska Institutet, and Dr. Henry Chan.

We hope you enjoy DMM 2018 and look forward to vigorous discussions on this timely topic.

With very best wishes

Megan Donovan-Chien
Vice President, DMM Global Foundation

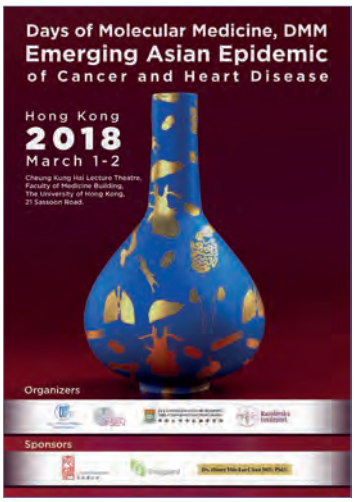
SPONSORS

Bactiguard

Croucher Foundation
裘槎基金會

Dr. Henry Hin-Lee Chan MD, PhD.

THE 2018 MEETING



The 2018 conference aims to highlight how new technologies, the study of unique patient populations, and new academic-foundation-private sector partnerships, are aligning to fight the global increase of cancer and cardiovascular diseases in a way that is clearly beyond the conventional thinking of pandemics, tropical illnesses, and infectious diseases.

A dramatic rise in cancer has engulfed the entire Asian region, driven by aging, environmental concerns, unique dietary/nutritional norms, and genetic predispositions for unique forms of the disease. Heart disease is expanding exponentially, largely due to the increased prevalence of obesity and associated Type II diabetes, with an extraordinarily high incidence of stroke, and unique genetic susceptibility to statin intolerance. The volume of diseases in the relatively uniform genetic background of China holds great promise for uncovering new insights into these important human diseases. Meanwhile, scientific advances ranging from liquid biopsies, cancer genetics, the development of NHP and other large animal models for testing regenerative therapeutic strategies, new genetically engineered NHP and pig models, mRNA cancer vaccines, CAR-T cell therapy for leukemia, and a host of new technologies hold great promise. Research support for developing new therapeutic approaches has increased dramatically in China, which is fostering a unique Asian perspective where cost-effectiveness will be critical to allow widespread access. Biotechnology and innovation are likely to blossom in this part of the world in the coming decade, particularly as China becomes an increasingly important market for cancer and heart drugs. In this regard, this year's program includes a roundtable discussion on promoting innovation via new partnerships with foundations, the private sector, and academia, with several notable leaders with direct interests in the region presenting diverse viewpoints. The DMM 2018 keynote speaker is Victor Dzau, MD, the President of the National Academy of Medicine (USA) and a leader in cardiovascular science and medicine.

Organizers:

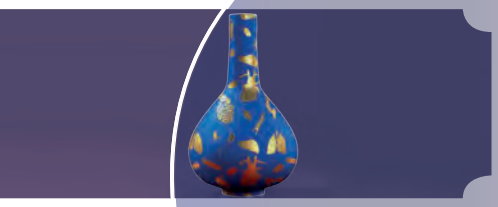
The University of Hong Kong *(Hong Kong)*, DMM Global Foundation *(Cambridge, USA)*, Karolinska Institutet *(Stockholm, Sweden)*, in collaboration with the Fondation IPSEN *(Paris, France)*

Program Committee:

Kenneth CHIEN *(Professor, Karolinska Institutet)*, Gabriel LEUNG *(Dean, Li Ka Shing Faculty of Medicine, The University of Hong Kong)*, Paul TAM *(Provost and Deputy Vice-Chancellor, The University of Hong Kong)*, Maria MASUCCI *(Deputy Vice Chancellor for International Affairs, Karolinska Institutet)*

Meeting Coordinators:

Megan DONOVAN-CHIEN *(DMMGF)*, Thomas Yuk-yu LEON *(The University of Hong Kong)*, Celine COLOMBIER-MAFFRE *(Fondation IPSEN)*, Ms Vikkie CHAN *(The University of Hong Kong)*, Professor Wai-Keung LEUNG *(The University of Hong Kong)*



MOST RECENT DMM MEETINGS

2006 • Inflammatory Pathways in Disease *(Stockholm, Sweden, May 24-27)*

2007 • Emerging Technologies in Cancer Biology *(Cambridge, USA, May 22-24)*

2008 • Molecular Medicine in Cognitive Dysfunction *(Stockholm, Sweden, April 17-18)*

2009 • Human Genetics, Stem Cells and Physiology:
The Future of Individualized Medicine *(Boston, USA, May 7-9)*

2010 • Systems biology approaches to cancer and metabolic disease
(Stockholm, Sweden, May 20-22)

2011 • Re-engineering regenerative medicine *(Hong Kong, China,
November 10-12 - in collaboration with the University of Hong Kong)*

2012 • From rare to care *(Vienna, Austria, October 8-10)*

2015 • Partnerships in Translational Science and Medicine
(Stockholm, Sweden, May 7-8)

2016 • Bugs to Bedside to Biotech *(Stockholm, Sweden,
October 27-28)*

THE DMM SERIES

Over the past 17 years, The Days of Molecular Medicine Meeting (DMM) has become one of the most prestigious international meetings dedicated to promoting translational science and molecular medicine. The meeting was initiated with the vision that medical research is the key to further understanding human biology and disease, which has increasingly become enabled by major leaps in core technology spanning the field of genetics, imaging, stem cell biology, and biotechnology. The meeting is designed to break new ground in a specific arena that is viewed as being timely as well as critical to translational science at the highest level, and is not intended to highlight a single disease area or technology.

Days of Molecular Medicine Global Foundation

The DMM Global Foundation

The DMM Global Foundation is a non-profit organization dedicated to forming a bridge between advances in molecular medicine and global cardiovascular health, as well as advancing women's maternal health, through educational programs and research collaborations. Our primary focus is to promote global collaboration in the field of molecular medicine through the organization of conferences with other leading international institutions. A key to the success of these conferences is our dedication to support young physician-scientists, from all parts of the world, to participate in these conferences and to expand the international biomedical network to further advance global health issues. In addition, we are developing a Global Health initiative designed to identify, design, and catalyze promising research collaborations that uncover new scientific approaches to global cardiovascular health and women's maternal health.

Karolinska Institutet

Karolinska Institutet

Karolinska Institutet is one of the world's leading medical universities. Its vision is to significantly contribute to the improvement of human health. Karolinska Institutet accounts for the single largest share of all academic medical research conducted in Sweden and offers the country's broadest range of education in medicine and health sciences. The Nobel Assembly at Karolinska Institutet selects the Nobel laureates in Physiology or Medicine.

FONDATION IPSEN

Fondation IPSEN

Created in 1983 under the auspices of the Fondation de France, the Fondation IPSEN tracks progress in biomedical research with the continuing aim of highlighting fundamental advances. Staying away from passing trends, the ambition of the Fondation IPSEN is to identify emerging knowledge and new paradigms, and to foster the most promising interconnections between domains that have not previously been communicating. Because it was necessary to concentrate its efforts, the topics selected reflect some of the most important challenges for the current evolution of the world as well as of knowledge: the aging of populations; the spectacular development of neuroscience and its contribution to the understanding of cognitive mechanisms; the interactions between the great biological systems, such as the nervous and endocrine systems, and the medical challenges posed by the biomedical revolution, particularly in the science of cancer. Over the last 32 years, the Fondation IPSEN has organized over 250 meetings and produced several hundreds publications; more than 250 scientists and biomedical researchers have been awarded prizes and research grants.

The University of Hong Kong

The University of Hong Kong, Asia's Global University, delivers impact through internationalisation, innovation and interdisciplinarity. It attracts and nurtures global scholars through excellence in research, teaching and learning, and knowledge exchange. It makes a positive social contribution through global presence, regional significance and engagement with the rest of China.

PROGRAM

THURSDAY, MARCH 1

8:00 am

Welcome

Ken CHIEN *(Professor, Karolinska Institutet)* and **Gabriel LEUNG** *(Dean, Li Ka Shing Faculty of Medicine, The University of Hong Kong)*

8:20-9:00 am

Keynote

Victor DZAU *(President, National Academy of Medicine, USA)*
The Emerging Global Health Epidemic of Cancer, Cardiovascular/ Metabolic Disease and Aging: Importance of Game Changing Science and Innovation

---

Session I

Cardiovascular and Metabolic Diseases in China

Chairs: **Rui-Ping XIAO** *(Director, Institute of Molecular Medicine, Peking University/Associate Editor New England Journal of Medicine)* and **David TANCREDI** *(Executive Director, Fondation Leducq)*

9:00-9:35 am

Zhengming CHEN *(Co-director of China Oxford Centre for International Health Research)*
Halving Premature Deaths from Cardiovascular Diseases in China

9:35-10:10 am

Rui-Ping XIAO *(Director, Institute of Molecular Medicine, Peking University/ Associate Editor New England Journal of Medicine)*
New Therapeutic Pathways for Metabolic Syndrome: A Tale of MG53

10:10–10:30 am

Break

10:30-11:05 am

James LEVINE *(President, Fondation IPSEN)*
Beyond Fitbit: "NEAT" (Non-Exercise Activity Thermogenesis) and Anti-obesity

11:05-11:40 am

Lars JAKOBSSON *(Associate Professor, Karolinska Institutet)*
Molecular and Cellular Mechanisms of Vascular Malformation

11:40-12:15 pm

Jinfen LIU *(Chief Physician, Cardiothoracic Surgery Department, Shanghai Childrens Medical Center)*
Pressure Overload Increases Cardiomyocyte Proliferation in Right Ventricle

12:15-1:15 pm

Lunch

1:20-1:55 pm

Karl-Ludwig LAUGWITZ *(Professor, Chief of Cardiovascular Medicine, Technical University of Munich)*
Pluripotent Stem Cell Models of Human Heart Disease

Session II

Cancer Genetics and Diagnostics

Chairs: **Jussi TAIPALE** *(Professor, Karolinska Institutet/Cambridge, UK)* and **Orla SMITH** *(Editor, Science Translational Medicine)*

1:55-2:30 pm — **Gabriel LEUNG** *(Dean, Li Ka Shing Faculty of Medicine, HKU)*
East-West Epidemiologic Consequences for Breast Cancer Detection

2:30-3:05 pm — **Jussi TAIPALE** *(Professor, Karolinska Institutet/Cambridge, UK)*
Systems Biology of Cancer

3:05-3:20 pm — Break

3:20-3:55 pm — **Maria LUNG** *(Chair Professor, Department of Clinical Oncology, HKU)*
New Insights into Nasopharyngeal Carcinoma

3:55-4:30 pm — **Tak MAK** *(University Professor, Princess Margaret Cancer Centre, UHN)*
T cell Receptors, Checkpoint Inhibitors and Cancer

4:30-5:05 pm — **Christos GEORGIADIS** *(Research Associate, UCL Great Ormond Street Institute of Child Health)*
Gene edited CAR-T Cell Therapies

6:00-8:30 pm — Speakers dinner

FRIDAY, MARCH 2

Session III

Biologically Targeted Cancer Therapeutics

Chairs: **Klas WIMAN** *(Professor, Karolinska Institutet)* and **Maria MASUCCI** *(Deputy Vice Chancellor for International Affairs, Karolinska Institutet)*

8:00-8:35 am — **Ava KWONG** *(Assistant Dean, Chief of Breast Surgery Division, The University of Hong Kong)*
Hereditary Breast Cancer as a Model of Familial Cancer in Asia:
From Genes to Personalized Therapy and Prevention of Breast Cancer

8:35-9:10 am — **Tony MOK** *(Chairman, Department of Clinical Oncology, The Chinese University of Hong Kong)*
Battling the Lung Cancer Epidemics in Asia

9:10-9:45 am — **Klas WIMAN** *(Professor, Karolinska Institutet)*
Novel Cancer Therapy by Targeting Missense and Nonsense Mutant TP53

9:45-10:00 am — Break

10:00-10:35 am — **Dennis LO** *(Professor, The Chinese University of Hong Kong)*
Towards the Use of Circulating DNA for Cancer Screening

10:35-11:10 am — **Xiaolin ZHANG** *(CEO, Dizal/Joint Astrazeneca-China Newcoirector, Innovation Center China, AstraZeneca)*
Designer Drugs for CNS Tumors: Crossing the Blood-Brain Barrier

11:10-11:45 am — **Li-Ming GAN** *(CVMD, Early Clinical Development, IMED Biotech Unit, AstraZeneca, Gothenburg, Sweden)*
Safety, Tolerability, Protein Expression Profile and Physiological Function of Modified mRNA Encoding for VEGF-A Following Intradermal Administration to Male Patients with Type II Diabetes – Results from a Phase 1, Randomized, Placebo Controlled Study

11:45-12:45 pm — Lunch

Session IV

Biotechnology Innovation: The Academic-NPO-Private Sector Axis

Chairs/Moderators: **Ken CHIEN** *(Professor, Karolinska Institutet);* **Paul TAM** *(Provost, The University of Hong Kong);* **Andy MARSHALL** *(Editor in Chief, Nature Biotechnology)*

1:00-1:20 pm — Keynote

Regina FRITSCHE-DANIELSON *(VP and Head of IMED CVMD, Cardiovascular and Metabolic Diseases, IMED Biotech Unit, AstraZeneca, Gothenburg, Sweden)*
Open Innovation: A New Paradigm for Academic, Biotechnology, and Pharma collaboration

Roundtable — NPOs and Innovation in Cancer and Heart Disease

1:20-1:40 pm — **Paul TAM** *(Provost, The University of Hong Kong)*

1:40-2:00 pm — **David TANCREDI** *(Executive Director, Fondation Leducq)*
Funding Impact in Cardiovascular Research

2:00-2:35 pm — Group Roundtable Discussion with Ken Chien

2:35-2:50 pm — Break

Roundtable — Private Sector and Innovation in China

2:50-3:10 pm — **Andy MARSHALL** *(Editor in Chief, Nature Biotechnology)*
Overview

3:10-3:25 pm — **Nina NILSSON** *(Vice President, Bactiguard)*
China Medical Device Approval via Hong Kong Clinical Studies: A Bactiguard Case Study

3:25-3:40 pm — **Michael SJÖSTRÖM** *(Co-Founder and CIO Geneva/Montreal/HKG, Sectoral Asset Management)*
China Oncology – Overseas Technology Acquisition Heating Up

3:40-3:55 pm — **Xiaolin ZHANG** *(CEO, Dizal/Joint Astrazeneca-China Newcoirector, Innovation Center China, AstraZeneca)*
Dizal – a Joint Venture Between China Local Innovation and Multinational Pharmaceutical Company

3:55-4:15 pm — Group Roundtable Discussion

Closing Remarks

Maria MASUCCI *(Deputy Vice Chancellor for International Affairs, Karolinska Institutet)*

SPEAKER ABSTRACTS

Victor DZAU

President
The National Academy of Medicine
Washington, USA

Victor J. Dzau was born in China and grew up in Hong Kong. He is the President of the National Academy of Medicine (NAM), formerly the Institute of Medicine (IOM). In addition, he serves as Vice Chair of the National Research Council. Dr. Dzau is Chancellor Emeritus and James B. Duke Professor of Medicine at Duke University and the past President and CEO of the Duke University Health System. Previously, Dr. Dzau was the Hersey Professor of Theory and Practice of Medicine and Chairman of Medicine at Harvard Medical School's Brigham and Women's Hospital, as well as Chairman of the Department of Medicine at Stanford University.

He is an internationally acclaimed leader and scientist whose work has improved health care in the United States and globally. His seminal work in cardiovascular medicine and genetics laid the foundation for development of the class of lifesaving drugs known as ACE inhibitors, used globally to treat hypertension and heart failure. Dr. Dzau pioneered gene therapy for vascular disease and was the first to introduce DNA decoy molecules to block transcriptions in human in vivo. His pioneering research in cardiac regeneration led to the Paracrine Hypothesis of stem cell action and his recent strategy of direct cardiac reprogramming using microRNA.

In his role as a leader in health care, Dr. Dzau has led efforts in innovation to improve health, including the development of the Duke Translational Medicine Institute, the Duke Global Health Institute, the Duke-National University of Singapore Graduate Medical School, and the Duke Institute for Health Innovation. He has served as a member of the Advisory Committee to the Director of the National Institutes of Health (NIH), chaired the NIH Cardiovascular Disease Advisory Committee and currently chairs the NIH Cardiovascular Stem Cell Biology and Translational Consortia. He has served on the Board of Directors of Medtronic, Genzyme and Alnylam and was on the Board of Health Governors of the World Economic Forum.

Currently he is a member of the Board of the Singapore Health System, member of the Health Biomedical Sciences the International Advisory Council of Singapore and Advisory Council of the Imperial College Health Partners, UK.

Since arriving at the National Academies, Dr Dzau has led important initiatives such as the Commission on a Global Health Risk Framework; the Human Gene Editing Initiative; and Vital Directions for Health and Health Care, and the NAM Grand Challenges in Healthy Longevity.

Among his many honors and recognitions are the Max Delbreck Medal from Charite, Humboldt and Max Plank, Germany, the Distinguished Scientist Award from the American Heart Association, Ellis Island Medal of Honor, and the Henry Freisen International Prize. In 2014, he received the Public Service Medal from the President of Singapore. He has been elected to the National Academy of Medicine, the American Academy of Arts and Sciences, the European Academy of Sciences and Arts, and Academia Sinica. He has received 13 honorary doctorates including from Hong Kong University.

NOTES

The Emerging Global Health Epidemic of Cancer, Cardiovascular/Metabolic Disease and Aging: Importance of Game Changing Science and Innovation

The world is confronted with the Emerging Global Health Epidemic of Cancer, Cardiovascular/ Metabolic Disease and Aging. Cardiovascular Disease is the number 1 cause of death globally with an estimated 17.7 million people died from CVDs in 2015, representing 31% of all global deaths. Over three quarters of CVD deaths take place in low- and middle-income countries. Cancer is second leading cause of death globally with an estimated 8.8 million deaths in 2015. The number of new cases is expected to rise by about 70% over the next 2 decades. Another area of significance is aging. Between 2015 and 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22%. In 2050, 80% of older people will be living in low- and middle-income countries. Importantly, these areas represent significant burdens in Asia especially China and Hong Kong. Without strategies to address these emerging epidemics, the world will face disastrous consequences in human sufferings, economic challenges and national insecurity.

Future solutions will depend on science and innovation and their applications to detection, treatment and public health in prevention of diseases. Indeed, science and technology are moving at an extremely rapid pace. Breakthroughs in science, medicine, and technology are occurring right now that have the potential to greatly transform health and medicine. Notably, advances in basic science, data science, technology, and the convergence of different fields of science are paving the way for these exciting new developments. We are seeing exciting medical breakthroughs that include: genetic engineering, regenerative medicine and tissue engineering, immuno-cancer therapy, precision medicine, big data & analytics and artificial intelligence. These advances in science and technology will transform all aspects of health and healthcare: from disease treatment to cure to early detection and prevention with the emergence of Precision public health. The future Healthcare delivery will enable a seamless continuum of care, change the way care is delivered, when care is delivered, where care is delivered and who care is delivered by.

Rapid technological advancements will increase the pace of change and create new opportunities but will also aggravate divisions between winners and losers. Automation and artificial intelligence threaten to change industries faster than economies can adjust, potentially displacing workers and limiting the usual route for poor countries to develop. Biotechnologies such as genome editing will revolutionize medicine and other fields, while sharpening socio-ethical differences. There will be an urgent need to address access and affordability s well as concern that these new technologies will increase health care costs and raise question of preparedness of current workforce. Certain jobs will be replaced while others will be transformed e.g., robots can replace certain manual tasks such as radiology and pathology. Finally, it would be important to address data ownership, privacy, sharing and cybersecurity concerns. These issues must be dealt with collectively and effectively in order to realize the full potentials of science and innovation.

Perspectives for the Future. Medical & technological breakthroughs & advances will provide an armamentarium of tools and approaches that can transform and revolutionize healthcare and health. Health & healthcare will be connected, precise, democratized and people centered with better outcomes and improved population health. However, the challenges will be in extent of adoption, controlling cost of care and preventing health inequity.

Zhengming CHEN

Professor of Epidemiology, Nuffield Department of Population Health, University of Oxford, UK

Co-director, China Oxford Centre for International Health Research

Professor Zhengming Chen is the lead principle investigator of the China Kadoorie Biobank, the world's largest blood-based prospective study ever established. He qualified in medicine at the Shanghai Medical University (SMU, now Fudan University) in 1983. He subsequently completed public health postgraduate training in the School of Public Health, SMU and gained his DPhil in Epidemiology at the University of Oxford in 1993. He currently holds the position of Professor of Epidemiology at the University of Oxford, and honorary professorships of Peking Union Medical College, Fudan University and Shanghai Institute of Biological Sciences, Chinese Academy of Sciences. He is the founding co-director of the China Oxford Centre for International Health Research.

Professor Chen's research has focused on the environmental, lifestyle and genetic determinants of chronic disease, development of evidence-based medicine and efficient strategies for chronic disease control in developing countries. Although based in Oxford, his research has mainly involved nationwide projects in China. In total, these probably represent the largest epidemiological collaboration in the world between China and other countries. They have provided, and will continue to do so, important results relevant to both Chinese and global health. Over the last 25 years, he has led large placebo-controlled trials involving in total 60,000 acute heart attacks, 20,000 strokes and 15,000 cancers, leading to major changes of international guidelines and new US FDA drug labelling. He has also led large observational epidemiologic studies of the relevance to health of tobacco, alcohol, adiposity, blood pressure, and diet. In particular, he initiated, and has led the prospective China Kadoorie Biobank study (www.ckbiobank.org) from its inception in 2002, which includes 512,000 adults enrolled during 2004-08 from 10 diverse areas across China. He has published over 280 peer-reviewed papers, with many highly cited (e.g. ~5000 citations for the top 5 papers), and also sits on various research committees.

NOTES

Halving Premature Deaths from Cardiovascular Diseases in China

Non-communicable chronic diseases (NCD) such as IHD, stroke and cancer are major causes of premature deaths and disability worldwide. In China, there are ~9 million annual deaths, with >8 million of them from NCD in adults, including ~2 million each from heart disease, stroke and cancer. While the standardized death rates from major cardiovascular diseases (CVD) have been declining significantly in most Western populations, they have been increasing in China in recent decades, especially IHD. Several important causes of CVD are known, but this knowledge is mainly based on studies in the West and does not fully explain much of the large heterogeneity in disease rates between Asian and Western populations or between different regions within China. Large blood-based prospective studies in diverse populations with heterogeneity in risk exposures, disease rates and genetic architecture are essential for reliable assessment of the causal relevance to CVD of lifestyle, environmental, genetic and biochemical factors, and their interactions.

China Kadoorie Biobank (CKB) is one of the largest prospective biobank studies in the world, involving 512,891 adults recruited during 2004-08 from 10 (5 urban, 5 rural) diverse areas across China, with extensive data collected at baseline and periodic resurveys using questionnaire and physical measurements, and with storage of biological samples. After 10-years follow-up, there were >40,000 deaths and ~0.9 million coded episodes of hospitalisation of >1000 different types, including >40,000 incident cases of stroke and >30,000 IHD. These baseline exposure and disease outcome data are now being complemented by blood assays of genetic and multi-omics biomarkers. Based on detailed prospective analyses of major risk factors in CKB, halving premature CVD deaths can be achieved in China through smoking cessation, decreasing hazardous alcohol drinking, halting the increase in obesity and the wide use of generic drugs (e.g. statins and anti-hypertensives) to prevent CVD recurrence.

Rui-Ping XIAO

Director, Institute of Molecular Medicine, Peking University
Beijing, China

Associate, Editor New England Journal of Medicine

Dr. Rui-Ping Xiao was trained as a physician-scientist in both China and the United States. She received her M.D. and medical training at Tong-Ji Medical University, China. In 1988, she went to the United States, and spent 20 years in National Institute on Aging (NIA), NIH, from a postdoctoral fellow to a tenured Senior Investigator and the Chief of the Receptor Signaling Section. Overlapping with her training at NIH, she also completed her Ph.D. study in the Medical School of University of Maryland from 1991 to 1995. Additionally, in 2005, she was invited by Peking University to serve as the Founding Director of the Institute of Molecular of Medicine (IMM) at Peking University (initially as a volunteer), and became a full-time returnee through the Chinese 1000-elite Program in 2010.

Currently, Dr. Rui-Ping Xiao is the Director of the Institute of Molecular of Medicine (IMM) at Peking University and a Peking University Chair Professor. Dr. Xiao's research has been focused on cardiovascular and metabolic diseases, with a major emphasis on a translational approach to take bench discoveries into clinically relevant situations. Ongoing research directions include signaling pathways involved in metabolic syndrome and associated cardiovascular complications. In addition, Dr. Xiao serves as a Council Member of the International Society of Heart Research and an Associate Editor of the New England Journal of Medicine *and an Editorial Board Member of multiple international top journals.*

NOTES

New Therapeutic Pathways for Metabolic Syndrome: A Tale of MG53

Nutrient overload and physical inactivity cause metabolic syndrome which comprises a cluster of conditions, including hypertension, hyperglycemia, dyslipidemia and central obesity. Metabolic syndrome increases the risk for cardiovascular disease and type 2 diabetes (T2D), and their combination is the leading cause of death in the United States as well as China. Insulin resistance is a fundamental pathogenic factor shared by these metabolic disorders, including metabolic syndrome, obesity and T2D. However, the mechanism underlying insulin resistance is not well understood. Recently, we have identified a striated muscle-specific E3 liagse, mitsugumin 53 (MG53), as a principal mechanism underlying insulin resistance and metabolic disorders. Specifically, MG53 is universally upregulated in multiple animal models and humans with insulin resistance and metabolic disease; and overexpression of MG53 leads to severe systemic insulin resistance and full-blown metabolic syndrome. Importantly, in *mg53* TG mice, skeletal muscle insulin resistance occurs before the onset of obesity and the impairment of insulin signaling in non-muscle tissues such as liver and fat. In contrast, genetic ablation of MG53 protects mice against high-fat diet-induced insulin resistance, metabolic disorders and hypertension. Mechanistically, MG53 acts as a novel E3 ligase responsible for ubiquitin-dependent degradation of insulin receptor (IR) and insulin receptor substrate 1 (IRS1) in both cardiac and skeletal muscle in the setting of insulin resistance and metabolic syndrome, affording a long-sought mechanism underlying metabolic disease-associated downregulation of IR and IRS1. In addition, MG53 elevates the expression of PPAR-α and its target genes, promoting myocardial utilization of free fatty acids, maladaptive cardiac remodeling and heart failure. These findings not only define MG53 as a powerful regulator of insulin sensitivity, but also mark MG53 as an important therapeutic target for the treatment of diverse metabolic diseases and associated cardiovascular complications.

James LEVINE

President
Fondation IPSEN
Paris, France

James A. Levine, president of Fondation Ipsen, is professor of medicine and Richard Emslander Chair at Mayo Clinic and a world-renowned leader in obesity research and child advocacy, is Co-Director of the Mayo Clinic/Arizona State University Obesity Solutions Institute

Doctor Levine is a Professor of Medicine at Mayo Clinic, holds the Richard Emslander Chairs in Nutrition and in Metabolism, and is a Mayo Clinic Professor of Physiology and Bioengineering. He holds five tenured professorships at ASU Doctor Levine is the Regents Professor at Umea University Sweden where he directs the Swedish Center for Obesity Solutions. He is the Deans Distinguished Professor at Case Western Reserve University, as well.

Levine is an international expert on obesity. In the United States, he was an invitee to the President's Panel and the State Department. Internationally, he has consulted with governments around the world. He is a designated Expert at the United Nations. The author of the non-fiction work "Move A Little Lose A Lot," he has published more than 150 articles on building effective solutions to obesity for adults and children, including five in the journals Science and Nature. His research has focused on approaches to help people become more active, decrease cardiovascular risk and become healthier. He has developed multiple body-worn devices that measure physical activity and caloric intake, and the treadmill desk.

Levine is an award winner author of fiction (The Blue Notebook, Dignitas, Bingo's Run) and more than 50 awards in science including the Innovator Award at NASA, the World Trade Fair award for Innovation,

NOTES

Beyond Fitbit: "NEAT" (Non-Exercise Activity Thermogenesis) and Anti-obesity

Sitting too much kills. Epidemiological, physiological and molecular data suggest that sedentary lifestyle, low Non-Exercise Activity Thermogenesis (NEAT), can partially explain how modernity is associated with obesity, more than 30 chronic diseases and conditions and high healthcare costs. Excessive sitting–sitting disease–is not innate to the human

condition. People were designed to be bipedal and, before the industrial revolution, people moved substantially more throughout the day than they do presently. It is encouraging that solutions exist to reverse sitting disease. Work environments, schools, communities and cities can be re-imagined and re-invented as walking spaces, and people thereby offered more active, happier, healthier and more productive lives. This presentation will link the basic science of NEAT to real world solutions.

Lars JAKOBSSON

Associate Professor
Department of Medical Biochemistry and Biophysics, Karolinska Institutet
Stockholm, Sweden

Lars Jakobsson is currently Associate Professor at the Department of Medical Biochemistry and Biophysics (MBB), Karolinska institutet, Stockholm, Sweden.
Following a Master degree in Medical Sciences Lars Jakobsson acquired his PhD in molecular medicine in the lab of Lena Claesson-Welsh at Uppsala University, Sweden, in 2007. He then joined the lab of Holger Gerhardt at London Research Institute - Cancer Research UK, as a postdoctoral EMBO fellow. In 2010 he moved to Karolinska Institutet, Sweden, and the lab of Christer Betsholtz, supported by the Swedish Cancer Society. In 2011 he acquired a position as assistant professor, supported by the William K. Bowes Jr. Foundation, and started his independent research group within the division of vascular biology. In 2017 Lars Jakobsson was appointed Associate Professor at MBB, Karolinska Institutet where he is group leader and teacher in medical school. In addition he is a young investigator of the Cardiovascular Programme at Karolinska Institutet.
Lars Jakobsson has made important contributions to the understanding of vascular morphogenesis and angiogenesis, including the discovery of regulatory functions of extracellular matrix – growth factor interactions, characterisation of endothelial cell behaviour in sprouting angiogenesis and the impact of differential gene expression thereon. His recent work sheds new light on mechanisms of vascular malformation, with respect to cell signalling and shear stress-instructed cell behaviour, and provide an avenue for improved therapy of human disease. In addition the Jakobsson lab has described mechanisms and functional relevance of smooth muscle cell recruitment to the lymphatic vasculature. His work furthermore involves investigations of the biology of the tumour vasculature. The discoveries have been facilitated by development of several unique mouse lines, inducible mosaic gene-deletion with lineage tracing, in vivo and ex vivo live imaging, microfluidics and 3D embryonic stem cell differentiation models. The findings have been published in well-renowned journals including Nature Cell Biology, Blood, Developmental cell etc.

NOTES

Molecular and Cellular Mechanisms of Vascular Malformation

In development and physiology the blood vasculature modifies its size and architecture in harmony with tissue requirements. This involves formation of arteries, veins and capillaries as well as pruning of dysfunctional vessels, -processes requiring the ability of endothelial cells (ECs) to perfectly interpret instructive tissue-, serum- and flow- derived signals. Failure of ECs to collectively re-organise, through migration and proliferation, may result in altered vascular hierarchy, function and even life-threatening malformations. Loss-of-function (LOF) mutations in the EC enriched gene endoglin (*ENG*) causes the human disease hereditary haemorrhagic telangiectasia-1, characterized by vascular malformations promoted by vascular endothelial growth factor A (VEGFA). How ENG deficiency alters EC behaviour to trigger these anomalies is not understood. Mosaic ENG deletion in the postnatal mouse rendered *Eng* LOF ECs insensitive to flow-mediated venous to arterial migration. Eng LOF ECs retained within arterioles acquired venous characteristics and secondary ENG-independent proliferation resulting in arterio-venous malformation (AVM). Analysis following simultaneous mosaic *Eng* LOF and overexpression (OE) revealed that *ENG* OE ECs dominate tip cell positions and home preferentially to arteries. *ENG* knock-down reduced VEGFA-mediated VEGFR2 degradation and promoted AKT signalling. Blockage of PI3K/AKT partly normalised flow-directed migration of *ENG* LOF ECs in vitro and reduced the severity of AVM in vivo. This demonstrates the requirement of ENG in flow-mediated migration and in modulation of VEGFR2 signalling in vascular patterning.

Jinfen LIU

Chief Physician
Cardiothoracic Surgery Department, Shanghai Childrens Medical Center
Shanghai, China

Dr. Jinfen Liu has been a chief pediatric cardiac surgeon for more than 30 years and was former director of Shanghai Children's Medical Center(SCMC). Under his leading, the heart center of SCMC performs more than 3500 pediatric heart surgeries and 1500 pediatric heart interventions, which is one of the biggest pediatric centers in the world. Dr. Liu is also the pioneer scholar in the computational stimulation on heart surgery. Dr. Liu is currently the director of Shanghai Institute of Pediatric Congenital Heart Disease, the director of the Birth Defect Clinical Center of National Children's Medical Center of China(Shanghai Section) and the director of National Society of Congenital Heart Diseases.

NOTES

Pressure Overload Increases Cardiomyocyte Proliferation in Right Ventricle

Background: Cardiomyocyte proliferation contributes to heart regeneration. It's well known how youth heart responses to ischemic damages of left ventricle, the most common cause of adult heart failure. However, little is known about how youth heart reacts to pressure overload seen in right ventricle, one of the main reasons of child heart failure.

Methods and results: Thickened right ventricular walls were taken from 6-month-old Tetralogy of Fallot (TOF) Children and pulmonary artery banding mice (postnatal day 14, banding duration 2 weeks). Cell proliferation assay indicates there was significant increase of Ki67 expression in both children's and mice's right ventricular cardiomyocytes. The percentage of Ki67-postive cardiomyocytes in children were increased one and a half times (0.045±0.013 vs 0.013±0.003, $p<0.01$), and the percentage in mice were increased 5 times (0.545±0.23 vs 2.6±0.7, $p<0.01$). The mRNA level of Ki67 and CyclinD2 were also significantly increased in both children's and mice's hearts. The cell size also increased profoundly, in children, increased from 1173.438±539.567 μm2to 1768.35±504.41 μm^2, and in mice, from 201.8 ± 75.1um^2 to 456.6 ± 138.7um^2. Transcript factor Gata4 and YAP1 were increased significantly.

Conclusions: Youth right ventricle in response to increased afterload is characterized by cardiomyocyte hyperplasia and hypertrophy. The underling mechanism may be related to GATA4 and YAP1.

Karl-Ludwig LAUGWITZ

Professor
Chief of Cardiovascular Medicine, Technical University of Munich
Munich, Germany

Karl-Ludwig Laugwitz, born 1968 in Berlin, studied Medicine at the Universities of Heidelberg and Berlin. In 1996 he started his specialisation in Internal Medicine and Cardiology at the Klinikum rechts der Isar and the German Herat Center of the Technical University Munich (TUM). In 2002 he won a prestigious Heisenberg Scholarship of the German Research Foundation and spent three years at the UC San Diego. In 2005 Karl-Ludwig Laugwitz moved as Assistant Professor in Medicine to the Cardiovascular Research Center of the Massachusetts General Hospital at the Harvard Medical School. In 2006 he accepted a W2-Professorship for Cardiology at the I. Medical Department of the Klinikum rechts der Isar and the German Heart Center in Munich. 2012 he has been elected as Medical Director and Chair of the Department of Cardiology at the TUM.

NOTES

Pluripotent Stem Cell Models of Human Heart Disease

Understanding the molecular basis of many cardiac diseases has been hampered by the lack of appropriate in vitro cell culture models that accurately reflect the human disease phenotypes. In the past few years, remarkable advances in stem cell biology have made possible this long-standing ambition-the generation of human and even patient-specific cellular models of diseases. Combined with other novel technologies in the fields of human genetics, tissue engineering, and gene-targeted manipulation, disease modeling with pluripotent stem cells has the promise to influence modern cardiovascular medicine on several fronts: molecular understanding of pathological mechanisms, early diagnosis, drug development, and effective treatment.

Gabriel LEUNG

Dean
Li Ka Shing Faculty of Medicine, The University of Hong Kong
Hong Kong

Gabriel Leung became the fortieth Dean of Medicine at the University of Hong Kong in 2013. Leung, a clinician and a respected public health authority, concurrently holds the Chair of Public Health Medicine. Previously he was Professor and Head of Community Medicine at the University and served as Hong Kong's first Under Secretary for Food and Health and fifth Director of the Chief Executive's Office in government.

Born in Hong Kong, Leung received his early education locally and in the UK. He read medicine at Western Ontario and completed family medicine residency training in Toronto. He earned his master's from Harvard and research doctorate from HKU.

Leung is one of Asia's leading epidemiologists, having authored more than 400 scholarly papers and edited numerous journals. He was the first to articulate the public health implications of the different epidemiologic characteristics of breast cancer between Chinese and western Caucasian women, particularly regarding population screening. He is currently carrying out a large case-control study in Hong Kong to develop a locally relevant risk assessment and decision tool, and subsequently a survival algorithm.

NOTES

East-west Epidemiologic Consequences for Breast Cancer Detection

Population cancer screening is a classical "motherhood-and-apple-pie" issue. It is almost always accepted by patients, doctors and the general public as being inherently desirable. Like all diagnostics in medicine however, the basic epidemiologic characteristics and economic consequences of any test should be subjected to careful scrutiny before widespread promulgation, especially when targeted at well populations.

Breast cancer is the commonest female malignancy in much of the developed world, and fast becoming such in the rapidly developing populations of emerging economies. Unlike other common cancers such as cervical or colorectal disease, there is still no readily identifiable obligate precursor state that is amenable to early curative intervention. This immediately reduces the preventive potential of any screening test to one of early recognition as opposed to preventing the occurrence of malignancy altogether. For Hong Kong women who sustain one of the highest incidence in Asia and where mammography screening remains haphazard, I present evidence of the potential efficacy and cost-effectiveness of mass screening, when compared to no screening, as well as when viewed in the context of allocating additional resources to the full spectrum of breast cancer care (ie from prevention to palliation) and for different types of cancer screening in women.

Beyond the numerical evidence, breast disease carries special meaning at the psychological, sociological and political levels. These issues often matter more to public perception, thus politics and policymaking. Vested interests from purveyors of mammographic equipment to service providers converge with the motivation to "do something" of well-intentioned advocates. Such alliances often render any rational and honest discussion in the public sphere difficult, resulting in uninformed decision-making by individual well women and inappropriate policy responses at large. The very different experiences with mammography screening in Singapore and Hong Kong, albeit with similar underlying epidemiology, are an interesting counterpoint. In parallel, questions about screening as a preventive measure are increasingly aired publicly in the US and Europe.

Finally, I report progress on a personalised, precision breast cancer detection project that draws on an ongoing local case-control study, the Shanghai Women's Health Study and Shanghai Breast Cancer Case-Control Study, combined with decision analytics to more optimally inform individual choice.

Jussi TAIPALE

Professor
Karolinska Institutet/Cambridge, UK

Professor Jussi Taipale obtained his Ph.D. at the University of Helsinki in 1996 and continued at the University of Helsinki for his post doctorate before moving to Johns Hopkins University (Baltimore, MD, USA). Since 2003, he has headed an independent research laboratory focusing on systems biology of growth control and cancer. He has published 92 articles of which sixteen are in the most prestigious scientific journals (Nature, Science and Cell), won numerous awards and grants (e.g., Anders Jahre Prize for Young Researchers, EMBO Young Investigator, ERC Advanced Grant and Vetenskapsrådet Distinguished Professor Program (Rådsprofessor)) and is internationally recognized as a leader in the field of genomics and systems biology. In 2012 Professor Taipale was elected as Member of the Nobel Assembly at the Karolinska Institutet, which awards the Nobel Prize in Physiology or Medicine. In 2017 he took up the position of Herchel Smith Professor of Biochemistry at the University of Cambridge, UK and also maintains research groups at University of Helsinki, Finland and Karolinska Institutet, Sweden.

The Taipale group's main expertise is high-throughput screening using cDNA (Varjosalo et al. Cell 2008) and RNA interference (Björklund et al. Nature 2006), and computational and experimental methods to identify causative regulatory mutations in non-protein coding DNA and to analyze genetic networks (see Yin et al., Science 2017, Jolma et al., Cell 2013 and Nature 2015; Yan et al., Cell 2013). In addition, the Taipale group has extensive expertise on mouse models of gene and regulatory region function (see Dumont et al., Science 1998; Ma et al., Cell 2002; Hallikas et al. Cell 2006; Sur et al., Science 2012).

NOTES

Systems Biology of Cancer

Cancer is the most complex genetic disease known – mutations in more than 380 genes have been associated with formation of different types of malignant tumors in humans. Yet, the malignant phenotype is simple, characterized by unrestricted growth of cells that invade neighboring healthy tissue and in many cases metastasize to distant organs. One possible hypothesis explaining the complexity of cancer genotypes is that oncogenic mutations would commonly activate cell type specific upstream mechanisms, which would then drive the expression of a common set of downstream genes that would be responsible for the cancer phenotype. We are taking a systems-biology approach to identify such mechanisms, and to understand how lineage-specific factors collaborate with oncogenic signals to drive cell proliferation. For this purpose, we have developed computational and experimental methods to identify direct target genes of oncogenic transcription factors that are commonly activated in major forms of human cancer. In addition, we have used high-throughput RNAi screening to identify genes required for cell cycle progression. Combining these two sets of data allows identification of specific transcription factors and gene regulatory elements that drive growth in particular tissues and tumor types. This analysis has identified MYC and CDK4/6/7/CCRK families as common targets of lineage-specific oncogenic pathways. The same mechanisms were also identified by analysis of common genome-wide association signals from multiple cancer types. Our results indicate that lineage-specific oncogenic transcription factors commonly regulate the same set of target genes important for growth control, and pave the way for development of broadly active antineoplastic and chemopreventive agents against cancer.

Some recent references:

1. Yin, Y., Morgunova, E., Jolma, A., Kaasinen, E., Sahu, B., Khund-Sayeed S., Das, P.K., Kivioja, T., Dave, K., Zhong, F., Nitta, K.R., Taipale, M., Popov, A., Ginno, P.A., Domcke, S., Yan, J., Schübeler, D., Vinson, C. and Taipale, J. Impact of cytosine methylation on DNA binding specificities of human transcription factors. *Science* **356**: 6337, 2017.
2. Sur, I., and **Taipale, J.** The role of enhancers in cancer. *Nature Reviews Cancer*, **16**: 483-493, 2016.
3. Jolma, A., Yin, Y., Nitta, K.R., Dave, K., Popov, A., Taipale, M., Enge, M., Kivioja, T., Morgunova, E. and **Taipale. J.** DNA-dependent formation of transcription factor pairs alters binding specificity. *Nature* **527**: 384-388, 2015.
4. Yan, J., Enge, M., Whitington, T., Dave, K., Liu, J., Sur, I., Schmierer, B., Jolma, A., Kivioja, T., Taipale, M., and **Taipale, J.** Transcription factor binding in human cells occurs in dense clusters formed around cohesin anchor sites. *Cell*, **154**: 801-816, 2013.
5. Jolma, A., Yan, J., Whitington, T., Toivonen, J., Nitta, K. R., Rastas, P., Morgunova, E., Enge, M., Taipale, M., Wei, G.-H., Palin, K., Vaquerizas, J. M., Vincentelli, R., Luscombe, N. M., Hughes, T. R., Lemaire, P., Ukkonen, E., Kivioja, T. and **Taipale J.** DNA-binding specificities of human transcription factors, *Cell*, **152**: 327-39, 2013.
6. Sur, I., Hallikas, O., Vähärautio, A., Yan, J., Turunen, M., Enge, M., Taipale, M., Karhu, A., Aaltonen, L. A., and **Taipale, J.** Mice Lacking a Myc Enhancer Element that Includes Human SNP rs6983267 Are Resistant to Intestinal Tumors. *Science* **338**: 1360-3, 2012.

Maria LUNG

Chair Professor
Department of Clinical Oncology, The University of Hong Kong
Hong Kong

Maria Li Lung is a Chair Professor of the Department of Clinical Oncology at the University of Hong Kong (HKU). She is also the Director of the Center for Nasopharyngeal Carcinoma Research in Hong Kong. Her main research interests focus on elucidating the molecular genetic basis of cancers of importance in Chinese. In NPC, her early research involved understanding the genomic diversity of Epstein-Barr Virus (EBV) isolates in NPC. Through functional approaches, her research resulted in discoveries of critical host chromosomal regions and candidate tumor suppressor genes contributing to the development of these tumors. More recent interests involve using next-generation sequencing (NGS) approaches to elucidate the genetic susceptibility and to understand the tumor molecular landscape of germline and somatic genetic variants in NPC. The Center for NPC Research focuses on basic, translational, and clinical NPC research and involves several universities and public hospitals. Together we seek to focus on basic, translational, and clinical research to elucidate the importance of NPC in Hong Kong. It is funded by a Research Grants Council Area of Excellence grant. Prof Lung also leads a RGC Theme-based Research program on translational studies of gastrointestinal tract cancers, with an emphasis on esophageal squamous cell carcinomas, which deals with translational studies for personalized medicine.

Prof Lung received her BA from Cornell University and PhD from the Cancer Biology Research Laboratory at Stanford University in the United States. After a postdoc at the Massachusetts Institute of Technology in the Center for Cancer Research, she joined the Department of Microbiology at HKU. She subsequently moved to the Department of Biology at the Hong Kong University of Science and Technology (HKUST) and became one of its founding members. She was the founding director of the Center for Cancer Research at HKUST. In 2009, she returned to HKU as a Chair Professor in the Department of Clinical Oncology.

Prof Lung was the Founding Co-Chair of the prestigious international NPC Gordon Research Conference, which brings basic and clinical science experts, students, postdoctoral fellows and industrial scientists together, biannually.

NOTES

New Insights into Nasopharyngeal Carcinoma

Nasopharyngeal carcinoma (NPC) is a cancer of special importance to Southern Chinese, who have the highest incidence of this cancer worldwide. Its peak incidence is amongst individuals only in their 40's and 50's in age. We have been interested in understanding the genetic etiology of this cancer and trying to find new approaches for its diagnosis and treatment.

Using next-generation sequencing (NGS) approaches, we have studied NPC genetic susceptibility and molecular landscape alterations hallmarking this cancer. We have utilized a cohort of early-age onset NPC cases and NPC cases having a family history of this cancer to identify candidate cancer predisposition genes. The macrophage stimulating receptor 1 (*MST1R*) gene mapping to chromosome 3p21.3 was found to play an important role in NPC development. Using whole-exome sequencing approaches, we also analyzed genomic changes in primary, recurrent, and metastatic lymph node NPC tumors. These studies identified key NF-kB pathway regulators and other important cell cycle and chromatin modification regulators contributing to NPC development and metastasis.

Due to its innocuous symptoms, NPC is usually not diagnosed until late in the progression of this cancer, when treatment prospects are decreased. We are also utilizing non-invasive liquid biopsies to identify the circulating tumor cells (CTCs) from patients with NPC. CTC enumeration provides the capacity for real-time monitoring of treatment efficacy. We are also able to determine the genetic profiles of patients before, during and after clinical treatment. Using this novel approach, we will be able to examine important questions such as tumor heterogeneity and development of drug resistance. We expect our studies to provide new insights into NPC development and spread and to usher in the era of personalized care of these patients.

Tak MAK

University Professor
Princess Margaret Cancer Centre, UHN
Toronto, Canada

Tak W. Mak is a Director at the Princess Margaret Cancer Centre (PMCC) and a University Professor in the Department of Medical Biophysics and Department of Immunology, University of Toronto. He was trained at the University of Wisconsin in Madison, the University of Alberta, and the PMCC in Canada. His research interests center on recognition and regulation in the immune system as well as cell survival and cell death in normal and malignant cells. He is best known as the leading scientist of the group that first cloned the genes of the human T cell antigen receptor and elucidated the function of CTLA-4 as the first immune checkpoint. More recently, his laboratory has embarked on studies of the signaling pathways that sustain the cancer cell phenotype, focusing on genes involved in cancer cell metabolic adaptation and the maintenance of aneuploidy. As well as his basic research expertise, Dr. Mak has extensive industrial experience. He was Vice-President of Research at Amgen and co-founded several biotech companies, including more recently, Agios Therapeutics actively engaged in the discovery and development of oncology drugs. He also serves on the Advisory Boards of various commercial and academic Institutions, including MD Anderson Hospital, Boston Children's Hospital at Harvard Medical School, and Stand Up Against Cancer (AACR), among others. He holds a dozen Honorary Doctoral Degrees from universities in North America, Europe and Asia, is an Officer of the Order of Canada, and has been elected a Foreign Associate of the National Academy of Sciences (USA), a Foreign Associate of the American Academy of Arts and Sciences, and a Fellow of the Royal Society of London (UK). Dr. Mak has won international recognition in the forms of the Emil von Behring Prize, the King Faisal Prize for Medicine, the Gairdner Foundation International Award, the Sloan Prize of the General Motors Cancer Foundation, the Novartis Prize in Immunology, and the Paul Ehrlich Prize and Ludwig Darmstaedter Prize of Germany.

NOTES

T cell Receptors, Checkpoint Inhibitors and Cancer

Immunologists have dreamed of treating cancer using immunotherapy for over a century. Until relatively recently, the main hurdle to achieving this goal was a lack of understanding of the molecular mechanisms underlying how T cells recognize their targets as well as how the expansion and homeostasis of these lymphocytes is controlled. Over the last three decades, the cloning of the T cell receptor genes, as well as the discovery of the functions of major costimulatory and inhibitory receptors governing T cell behavior, has allowed the manipulation of the activity of these lymphocytes. Building on the original T cell receptor gene discoveries, CAR-T cell immunotherapy, with its T cells expressing engineered anti-tumor receptors, has been invented. These breakthrough treatments have recently been approved for leukemia and lymphoma patients. Similarly, with the unearthing of the functions of the first inhibitory receptor CTLA-4, and subsequently PD-1 and PD-L1, the potential of immune checkpoint blockade therapy has become clear and indeed led to much excitement. Anti-CTLA-4 therapy for the treatment of melanoma was the first to be approved, followed by the application of anti-CTLA-4, anti-PD-1 and anti-PD-L1 strategies for the treatment of lymphomas, lung, bladder, kidney, head and neck, and other cancers. Ongoing clinical trials are currently exploring combinations of checkpoint inhibitors and costimulatory receptors. However, early results suggest that the enhanced efficacy of this approach is accompanied by increased adverse side-effects. Thus, new avenues beyond checkpoint inhibition are under investigation. Increasing the ability of activated T cells to extravasate into tumors, as well as other manipulations of the tumor microenvironment, have become major topics of interest. This talk will focus on recent advances in immunotherapeutic approaches that extend beyond immune checkpoint inhibition.

Christos GEORGIADIS

Research Associate
UCL Great Ormond Street Institute of Child Health
London, UK

Dr. Christos Georgiadis, Ph.D, is an NIHR funded postdoctoral research associate in the Molecular and Cellular Immunology section at the Great Ormond Street Institute of Child Health, London. Over the past 8 years he has been researching novel viral gene therapy vectors for the treatment of neurodegenerative, cutaneous and hematological diseases. His current focus has been the pre-clinical development of state-of-the-art genetically modified CAR-T cells in the Prof. Qasim lab employing novel gene editing techniques for the generation of universal, 'off-the-shelf', CAR T cell therapies for pediatric and adult B and T cell malignancies. He is leading a small group of Ph.D students and research scientists with an aim to improve the efficiency and delivery of gene therapy vectors while broadening their applicability to a wider group of genetic disorders.

NOTES

Gene Edited CAR-T Cell Therapies

Chimeric antigen receptor (CAR) engineered T cell therapies are inducing high rates of remission in certain types of hematological malignancies. CARs against CD19 have been used most widely, using lentiviral and gamma-retro viral gene delivery. Almost all trials to date have used CAR-T cells from autologous cell harvests but this may not always be feasible and is time consuming and expensive. Gene editing technology can be used to modify T cells to enable their use 'off-the-shelf' as a universal therapy. The first application of has been against CD19+ B-cell acute lymphoblastic leukemia using Transcription Activator-Like Effector Nucleases (TALENs). Depletion of TCR$\alpha\beta$ and reduction of CD52 expression was used to circumvent the need for HLA matching and success in two infants is now being followed by early phase clinical trials. At the same time emerging CRISPR/Cas9 systems have also been developed to further improve the strategy through more efficient engineering and coupled transduction and editing effects. These are expected to form the basis of the next generation of edited T cell therapies.

Ava KWONG

Assistant Dean
Chief of Breast Surgery Division, The University of Hong Kong
Hong Kong

Dr. Ava Kwong presently hold the position of the Chief of Breast Surgery Division Director of the Tung Wah Hospital Breast Centre, and Director of Breast Center of University of Hong Kong - Shenzhen Hospital. She is also Clinical Associate Professor of Department of Surgery, Honorary Clinical Associate Professor of Department of Medicine (Oncology) and Assistant Dean (Faculty Advancement and Knowledge Exchange) of Faculty of Medicine, The University of Hong Kong. In addition she is Honorary Consultant in Breast Surgery at Hong Kong Sanatorium and Hospital. From 2006-2013 she held the position of Visiting Associate Professor, Division of Oncology, at the Stanford University, USA.

Aside from her clinical and academic positions, she contributes to the governmental bodies and has been appointed to be a member of member of Working Group on Colorectal and Breast Cancer Screening for High Risk Groups in 2018 and the Cancer Coordinating Committee of the Food and Health Bureau, Government Secretariat, The Government of the Hong Kong Special Administrative Region, The People's Republic of China in August 2014. In the healthcare public service front, she is on the member of Expert Panel in Cancer Genetics subcommittee to Hospital Authority, Hong Kong, and was appointed to be the co-leader of Cancer Work Group in the development of Cancer Services planning of Hong Kong West Cluster, Hospital Authority in 2012 being responsible in the planning of cancer services for the new development plan of Queen Mary Hospital, and Hong Kong West cluster.

During her surgical career, she has gained multiple awards and scholarships, including the Hong Kong International Cancer Congress "Young Investigator Award" in 2006 and 2008 on her research work on breast cancer genetics in Chinese and Asian population, the Breast Surgery International Best Paper Prize, at the International Society of Surgery International Surgical Week meeting in 2007, a scholarship for undertaking a research fellowship in Breast Cancer Genetics at the Stanford University School of Medicine in 2005 and also GB Ong Travelling Scholarship in 2016-2017. She is an enthusiastic teacher and trainer, and is a trainer for the breast cancer surgery subspecialty at College of Surgeons of Hong Kong. Her supervision of residents, PhD and Master Students have also led to over 12 awards on abstracts being presented in local and international meetings. She also has much interest in training of nurses and is the Director of Breast Cancer Nursing Workshop and Course which has been held annually since 2008 and is a teacher in Master Courses in University of Hong Kong and also Open University and Commissioned training programmes of Hospital Authority.

NOTES

Hereditary Breast Cancer as a Model of Familial Cancer in Asia: From Genes to Personalized Therapy and Prevention of Breast Cancer

Kwong A[1,2], Shin VY[1], Chan TL[3], Ma ESK[3]

[1] Department of Surgery, The University of Hong Kong, Hong Kong
[2] The Hong Kong Hereditary Breast Cancer Family Registry, Hong Kong
[3] Hong Kong Sanatorium and Hospital, Hong Kong

Considering individual's genetic background and characteristics of the tumors with the advances in genetic profiling from next generation sequencing, this enhances the understanding of the intra- and inter-tumor heterogeneity to facilitate a personalized therapeutic management of breast cancer patient. However, the major challenges are the interpretation and genetic counseling of the test results and the lack of actionable drugs even when inherited gene mutations are found which are of lower penetrance and rare. Moreover, there is a complete lack of study and knowledge in Asians to date. Therefore, we sought to dissect the mutational profile in Chinese HBOC patients by NGS, which may offer a personalized treatment strategy for these patients. In local Chinese cohort, with over 2750 breast and ovarian cancer patients, the overall *BRCA* mutation frequency is 9.4%. Other susceptibility genes, such as *PALB2* and *RAD51D*, contributed to 2.15%. Recently, *RECQL*, a high penetrance breast cancer susceptibility gene, has been reported in Canada and Poland with European ancestry. Notably, we discovered a different *RECQL* mutation spectrum in Chinese. These variations in mutation spectrum suggested the importance of implementing ethnic-specific multigene panels. On the other hand, we identified 51 pathogenic or likely pathogenic somatic variants from 81 tumors in patients who tested germline negative. Of which, the most frequently mutated genes in this patient cohort were PIK3CA (26%) and TP53 (13.7%). These provide useful information to identify actionable drugs which may represent a personalized treatment for patients with no *BRCA* mutation.

Tony MOK

Chairman
Department of Clinical Oncology, The Chinese University of Hong Kong
Hong Kong

Professor Tony S. K. Mok was trained at the University of Alberta, Canada and he subsequently completed a fellowship in medical oncology at the Princess Margaret Hospital in Canada. After working as a community oncologist in Toronto, Canada for seven years, he returned to Hong Kong in 1996 to pursue an academic career. Professor Mok is the Li Shu Fan Medical Foundation endowed Professor and Chairman of Department of Clinical Oncology at the Chinese University of Hong Kong. His main research interest focuses on biomarker and molecular targeted therapy in lung cancer. Professor Mok was the Principal Investigator and first author on the landmark IRESSA® Pan-Asia Study (IPASS), which was the first study that confirmed the application of precision medicine for advanced lung cancer. He has also led and co-led multiple studies including the FASTACT 2, IMPRESS, ARCHER 1050, ALEX and AURA 3. These projects address various aspects on management of EGFR mutation positive lung cancer, and basically have defined the current practice. He dedicates his work on precision medicine for lung cancer by also engaging in clinical research on ALK positive lung cancer and immunotherapy. The series of clinical trials, led or co-led by Professor Mok, have defined precision medicine for lung cancer. His work has been adopted by multiple international guidelines including NCCN, AMP/IASLC/CAP, ASCO and ESMO. He also contributes to the development of clinical research infra-structure in China and Asia. He cofounded the Lung Cancer Research Group, Chinese Thoracic Oncology Research Group and Asia Thoracic Oncology Research Group.

Professor Mok has contributed to over 220 articles in international peer-reviewed journals, including the New England Journal of Medicine, Science, Lancet and Journal of Clinical Oncology, and contributed to multiple editorials and textbooks. He is an Associate Editor for thoracic oncology for the Journal of Clinical Oncology and other international journals. He is the Past President and Current Treasurer of the International Association for the Study of Lung Cancer (IASLC). He is active in international education activity and has made significant contribution to AACR, ASCO, CSCO and ESMO. His work was recognized by numerous awards including Bonnie Addario Award in 2015, Fellowship of the American Society of Clinical Oncology (FASCO) in 2017 and Paul Bunn Jr Scientific Award in 2017.

NOTES

Battling the Lung Cancer Epidemics in Asia

Incidence of lung cancer continues to rise while this starts to decline in USA and selective European countries. For decades to come, our health care systems in Asia must continue battling with this epidemic. It is clear that strict tobacco control is the most effective prevention, but most governments are reluctant taking the tough measure as the economic impact is large. In short of such, health care workers must dedicate their effort and energy on better treatment. Personalized medicine for lung cancer is now a reality. With the discovery of EGFR mutation and ALK translocation, we are now able to select therapy according to the driver oncogene. IPASS study (Mok et al NEJM 2009) is the first randomized phase III study that established the efficacy of gefitinib, an EGFR TKI, as first line treatment of EGFR mutation positive lung cancer. Following such multiple phase III studies have confirmed the same finding. The same principle extends to management of TKI resistance. T790M accounts for 50% of TKI resistance and the third generation TKI, osimertinib, is designed to target this mutation. The AURA3 study (Mok et al NEJM 2017) confirmed the superiority of osimertinib over standard chemotherapy, and for such, all patients with TKI resistance should be tested for presence of T790M mutation. Similarly, ALK translocation is an actionable oncogene. Apart from crizotinib, we have now multiple second generation drugs with higher potency and better CNS penetration ability, which include ceritinib, alectinib and loratinib. Thus in Asia, genomic-based personalized medicine for lung cancer is a standard. And in addition, immunotherapy has also been proven to be efficacious in selective patients. The battle on lung cancer continues, but gladly, we are now fully armed to fight this battle.

Klas WIMAN

Professor
Department of Oncology-Pathology, Karolinska Institutet
Stockholm, Sweden

Klas G. Wiman is Professor of Molecular Cell and Tumor Biology at Karolinska Institutet.

Wiman obtained his Ph.D. degree at Uppsala University in 1981 and got his post doc training at Memorial Sloan-Kettering Cancer Center, New York 1982-85. He then returned to Sweden and worked with Georg Klein at Karolinska Institutet. Since 1999 he is full professor at the Dept. of Oncology-Pathology at Karolinska Institutet. His research is focused on tumor biology, the tumor suppressor p53, and cancer drug discovery. He has published more than 160 original and review articles.

Wiman and colleagues have discovered small molecules that reactivate mutant p53, including PRIMA-1 and APR-246 (PRIMA-1Met). Together with his colleagues, Wiman founded the company Aprea AB in 2003. APR-246 has been tested in a first-in-man phase I/IIa clinical trial in patients with hematological malignancies or prostate cancer. A phase II clinical trial with APR-246 in patients with high-grade serous ovarian cancer sponsored by Aprea Therapeutics AB is ongoing. Wiman has also discovered the p53 target gene Wig-1 (Zmat3) and characterized its ability to regulate mRNA stability, and published many other papers on various aspects of p53 and tumor biology.

Klas Wiman has coordinated an EU Integrated project («Mutp53») with 23 participating research groups and a budget of 8 million Euros 2004-9. He has co-edited two books on p53 published by Springer in 2005 and 2012. Wiman is a member of the Nobel Assembly at Karolinska Institutet, which awards the Nobel Prize in Physiology or Medicine.

NOTES

Novel Cancer Therapy by Targeting Missense and Nonsense Mutant TP53

The TP53 tumor suppressor gene is mutated in a large fraction of human tumors. The gene product p53 responds to cellular stress and induces cell cycle arrest and cell death through transactivation of downstream target genes, allowing elimination of incipient tumor cells. In addition, p53 regulates metabolism and other cellular processes. The majority of TP53 mutations in human tumors are missense mutations that lead to single amino acid substitutions and loss of specific DNA binding. We have previously discovered the low molecular weight compounds PRIMA-1 and APR-246 (PRIMA-1Met) that restore wild type function to mutant p53. Both PRIMA-1 and APR-246 are converted to the Michael acceptor MQ that binds covalently to cysteines in p53. We have shown that APR-246 synergizes with chemotherapeutic drugs such as cisplatin and carboplatin. Moreover, APR-246 inhibits thioredoxin reductase (TrxR1) and depletes glutathione (GSH) via MQ, which presumably contributes to its anti-tumor effect. A first-in-man phase I clinical trial in patients with hematological malignancies or prostate cancer demonstrated that APR-246 has a favorable safety profile. Clinical effects were observed. A phase II proof-of-concept clinical study in high-grade serous (HGS) ovarian cancer is currently performed by Aprea Therapeutics AB. A smaller but significant fraction of TP53 mutations are nonsense mutations that give rise to truncated and unstable p53 protein. Aminoglycoside antibiotics, e.g. G418, can induce translational readthrough of nonsense mutant TP53 and expression of full length p53. We found that combination of G418 with Mdm2 inhibitor Nutlin enhances levels of full length p53. The TP53, APC, PTEN and RB1 tumor suppressor genes carry nonsense mutations at significant frequencies in human tumors. Pharmacological induction of translational readthrough of nonsense mutant tumor suppressor genes is a promising approach for novel efficient cancer therapy.

Dennis LO

Professor
Li Ka Shing Institute of Health Sciences, The Chinese University of Hong Kong
Prince of Wales Hospital, Shatin, New Territories
Hong Kong SAR, China

Dennis Lo is the Associate Dean (Research) of the Faculty of Medicine, the Director of the Li Ka Shing Institute of Health Sciences and Chairman of the Department of Chemical Pathology of The Chinese University of Hong Kong. He received his undergraduate education from the University of Cambridge, and his Doctor of Medicine and Doctor of Philosophy degrees from the University of Oxford. He discovered the presence of cell-free fetal DNA in maternal plasma in 1997 and is a key driver of non-invasive prenatal diagnosis. He has also pioneered many non-invasive approaches for detecting cancer-associated molecular aberrations in blood. He is a Fellow of the Royal Society (UK) and a Foreign Associate of the US National Academy of Sciences, and has been awarded the King Faisal International Prize in Medicine in 2014 and the Future Science Prize in 2016.

NOTES

Towards the Use of Circulating DNA for Cancer Screening

There is much recent global interest in the use of circulating DNA in plasma for performing liquid biopsies for cancer. However, most of such work has been performed for monitoring subjects who have already been diagnosed with cancer. There is much less data in the use of such an approach for the screening of cancer in asymptomatic individuals. My group has a longstanding interest in the use of circulating DNA-based approaches for noninvasive prenatal testing and oncology. We wish to provide convincing evidence that circulating DNA can indeed be used for the early detection of cancer. We have therefore conducted a large-scale study involving over 20,000 asymptomatic individuals in Hong Kong and explored the use of circulating DNA in the screening of nasopharyngeal carcinoma (NPC). NPC is a relatively common cancer in the southern part of China. NPC is a particularly useful model for the study of liquid biopsies because Epstein-Barr virus (EBV) DNA can be found in virtually all cases of NPC in south China. Previous work from our group has shown that plasma EBV DNA consisted short DNA fragments exhibiting rapid kinetics and can be regarded as an archetypal circulating tumor DNA. Using plasma EBV DNA to screen this 20,000-person cohort, we were able to greatly increase the proportion of stages I and II NPC from the usual 20% to over 70%. Furthermore, clinical follow-up of the NPC identified following plasma EBV DNA screening has shown a 10-fold improvement in progression-free survival. We believe that the implementation of plasma EBV DNA screening for NPC would significantly reduce the mortality of NPC.

Xiaolin ZHANG

CEO
Dizal/Joint Astrazeneca-China Newcoirector, Innovation Center China, AstraZeneca
Shangai, China

Dr. Xiaolin Zhang is the founder and CEO of Dizal Pharmaceutical Co. Dr. Zhang started Dizal Pharmaceutical in 2017. Prior to that, he was the global vice president and the head of the AstraZeneca Innovative Medicine and Early Development Asia. Dr. Zhang has over 20 years of experiences in drug discovery and development. He made significant contributions to several drugs in market or under clinical development.
Dr. Zhang earned his PhD in molecular genetics from Oregon State University, USA and continued his academic career at Harvard Cancer Center, Harvard Medical School, and the BioMolecular Engineering Research Center, Boston University.

NOTES

Designer Drugs for CNS Tumors: Crossing the Blood-Brain Barrier

After tumor cells metastasized to the CNS, will the patient still have functional blood-brain barrier (BBB)? The answer to this question has been debated for decades, without clear consensus. AZD3759 is the first compound to come to the clinic, primarily designed to across the BBB effectively, for the treatment of non-small-cell lung cancer (NSCLC) containing epidermal growth factor receptor mutation (EGFRm+) and with central nervous system (CNS) metastases.

I will present both preclinical and clinical evidence demonstrating that BBB in patients with CNS metastasis largely remain intact and destruction of BBB in patients is heterogenous and tumor site-dependent. Consistent with the preclinical models, compounds with better BBB-penetrant properties produces superior clinical benefits for patients.

Li-Ming GAN

CVMD
Early Clinical Development, IMED Biotech Unit, AstraZeneca
Gothenburg, Sweden

Li-Ming Gan holds a position as professor/chief physician at the department of cardiology, Sahlgrenska University Hospital and Sahlgrenska Academy in Göteborg, Sweden. Academically, Li-Ming is a translational scientist focusing on cardiovascular research and in particular functional imaging techniques from preclinical animal models to humans to improve tools to diagnose and risk-stratify high-risk CV patients.

Li-Ming joined AstraZeneca for 15 years ago and been responsible for the atherosclerosis and heart failure pipeline between 2007 and 2011, among the projects initiated three of them have entered the clinical phase testing. Between 2011-2013, he worked as a Translational Science Director to help bridging the early projects into the human setting by using innovative integrated phenotyping approaches combining molecular and imaging based technologies to characterize various cardiovascular patient populations, including acute coronary syndrome, suspected ischemic heart disease, stable coronary artery disease, as well as heart failure with preserved ejection fraction. The unique deep phenotyping data generated from these cohorts has greatly contributed to identification and validation of a number of novel therapeutic targets. Since 2013, Li-Ming was appointed as a Senior Director Physician in early clinical research unit and now Early Clinical Lead for phase 1 and 2 clinical programs within the cardiovascular area. Currently, Li-Ming is leading 2 phase 2 trials, 1 phase 1 trial, and two projects approaching man. Li-Ming has been instrumental behind the phase 1 trial using modified VEGF mRNA to demonstrate safety, tolerability, as well as proof of mechanism and proof of principle in patients with T2D.

NOTES

Safety, Tolerability, Protein Expression Profile and Physiological Function of Modified mRNA Encoding for VEGF-A Following Intradermal Administration to Male Patients with Type II Diabetes – Results from a Phase 1, Randomized, Placebo Controlled Study

Modified messenger RNA (modRNA) is a novel, highly efficient, biocompatible modality for tissue specific therapeutic protein expression. Delivery of vascular endothelial growth factor A (VEGF-A) modRNA to ischemic tissues offers the potential for regenerative angiogenesis. In preclinical rodent models of wound healing, transient expression of VEGF-A using this modality improved healing rate. We designed and conducted a first-in-patient trial using single dose intradermal administration of VEGF-A modRNA in ascending doses, and evaluated safety and tolerability. Further, temporal tissue protein expression of VEGF-A as well as physiological effects were studied by microdialysis and laser Doppler fluximetry, respectively. In this talk, results from this Phase I randomized placebo controlled clinical trial will be revealed.

Regina FRITSCHE-DANIELSON

VP and Head of IMED CVMD
Cardiovascular and Metabolic Diseases, IMED Biotech Unit, AstraZeneca
Gothenburg, Sweden

Regina has an academic background in cardiovascular physiology and pharmacology with long experience from working in the pharma industry where she has been leading projects from target discovery up to phase 2 clinical trials. Regina is currently leading the R&D group accountable for research and development through clinical proof of concept in the cardiovascular, metabolism and chronic kidney diseases with focus on regenerative medicine and disease modification.

NOTES

Open Innovation: A New Paradigm for Academic, Biotechnology, and Pharma Collaboration

AZ has fostered an "Open Innovation" strategy for forging new partnerships with academia, the private sector, and non-profit organizations. The IMED CVMD at AstraZeneca is focused on discovering and developing novel drug candidates to improve the lives of patients with long term debilitating cardiovascular and metabolic diseases, including heart failure, diabetes, non-alcoholic steatohepatitis (NASH) and chronic kidney disease. Our core mission is to save the lives of patients by jointly addressing their cardio-renal-metabolic risks. By combining internal scientific knowledge and expertise in drug discovery and development with deep knowledge from external partners in the academic and private sector, we have established innovative therapeutic strategies that include novel ASO and mRNA platforms (Ionis and Moderna therapeutics, respectively). An Integrated Cardio-Metabolic Centre has been established at Karolinska Institute that allows AZ and KI faculty to work side-by–side and to integrate efforts in real-time, which has resulted in rapid identification of new targets, rapid translation to large animal studies, and efficient transition to Phase I and II studies of VEGF modRNA. At the new Cambridge site, a host of new collaborations have been established in parallel, allowing early access to human genetics data, chemical libraries and screening platforms. The IMED CVMD has forged partnerships with academic institutions in Asia, including Singapore, Beijing, Shanghai, Taiwan and Hong-Kong and recognizes the potential of expanding the collaborative network in Asia, particularly in light of the emerging epidemic of cardio-metabolic disease in the region and the ever-increasing calibre of scientific talent in China and neighbouring regions. A core strategy for AZ is to follow the science and to enable targeting of previously undruggable targets. Collaborating with leading investigators across the world is part of the way we work and strengthens our scientific leadership, our portfolio and successful delivery of novel medicines to patients in need.

David TANCREDI

Executive Director
Fondation Leducq
Boston, USA

David Tancredi is Executive Director and member of the Board of the Fondation Leducq, a private French philanthropic foundation dedicated to promoting internationally collaborative research in cardiovascular disease and stroke. Since 2004, he has overseen the development of the foundation's signature program, the Transatlantic Networks of Excellence in Cardiovascular Research, which encourages internationally collaborative research in the areas of the foundation's mission. In 2008, together with Fondation Leducq co-director Martín Landaluce, he developed and launched Broadview Ventures, a venture philanthropic program to support the development of technology for the diagnosis and treatment of cardiovascular disease and stroke through targeted, early stage, investment. Prior to working at the Fondation Leducq Dr. Tancredi worked as an emergency physician at Massachusetts General Hospital and Harvard Medical School. In addition to a medical degree from Harvard Medical School he has a Ph.D. in sociocultural anthropology from the University of Chicago, where he studied the articulation of modern medicine and traditional culture among the contemporary Nahuas of central Mexico. He is a graduate summa cum laude *in social anthropology from Harvard College.*

NOTES

Funding Impact in Cardiovascular Research

The Leducq Foundation supports research in cardiovascular disease and stroke at the international level through two separate but complementary programs, the Transatlantic Networks of Excellence (TNE), and Broadview Venture (BV)s. With both programs, the foundation looked to leverage existing resources and funding sources to promote scientific innovation and to address unmet needs in cardiovascular and stroke research. The TNE program was designed around four principal objectives: scientific innovation, translation to improve human health, support for early career investigators, and the added value of international collaboration. It provides grants to self-assembled, international networks of investigators to pursue important thematic questions, and is notable for the flexibility afforded the network coordinators in managing their network programs. The foundation's experience with the TNE program will be discussed, along with the current efforts underway to analyze the impact of this program. Broadview Ventures is a venture philanthropic program, created by the Leducq organization in 2009, which aims to accelerate the development of promising technology for the diagnosis and treatment of cardiovascular disease and stroke through targeted investment. For translational investigators in cardiovascular disease and stroke, securing funds to move pre-clinical stage research into human testing and beyond remains a challenge. The 'translational funding gap' is widening as funding for academic research is uncertain, industry's support of early stage development is waning, and venture capital funding for start-up/seed investments is diminishing in favor of later stage, lower risk investments. BV is designed to provide critical financial and organizational support to early-stage companies in order to secure further funding, and ultimately to bring this technology to the care of patients. Although set up as a for-profit company, BV uses any eventual returns for further investment, or to support the Leducq Foundation. The investment model will be discussed, using examples from the BV portfolio.

Andy MARSHALL

Editor in Chief
Nature Biotechnology
New York, USA

Andrew Marshall was appointed Chief Editor of Nature Biotechnology *in 2000 after joining the journal in 1996. Since that time, the journal's impact factor has increased from 11.0 to 43.1. As well as frequently speaking about biotechnology research and translation at conferences, he also organizes meetings and symposia. Previously, he was Editor of* Current Opinion in Biotechnology. *He has written hundreds of articles and editorials in the trade and popular media, including* The Economist and Popular Science. *He has pioneered networking events termed SciCafés in Boston, San Francisco, New York, San Diego, Houston, London and Singapore, which showcase rising stars in academia to early-stage investors and industry R&D leaders. He obtained a BSc with Honors and his PhD and postdoctoral experience in molecular biology and microbiology at King's College London, where he was given the Helen White Prize for outstanding students, likely as a result of a clerical error.*

NOTES

Private Sector and Innovation in China: Overview

Nina NILSSON

Vice President
Bactiguard
Stockholm, Sweden

Nina Nilsson is the Senior Vice President at the Swedish medical device company Bactiguard, who develops infection prevention solutions which reduce the risk of healthcare associated infections and the use of antibiotics.
Prior to joining Bactiguard in 2015, she spent 10 years with Johnson & Johnson in the Nordics, Europe and the Middle East. Nina studied medicine at Karolinska Institute, in Stockholm Sweden, before shifting her focus to business. After completing her Marketing degree at IHM Business School in Stockholm she worked at the governmental agency Swedish Council for Health Technology Assessment before joining the medical device industry. Nina has a passion for improving the standard of care when it comes to preventing healthcare associated infections related to medical devices. Based in the Bactiguard HQ in Stockholm, she spends most of her time traveling all continents, driving the international launch of the company.

NOTES

China Medical Device Approval via Hong Kong Clinical Studies: A Bactiguard Case Study

Text Gaining approval for medical devices in China represents major opportunities as well as challenges. While the opportunities are very clear, the challenges can be limiting resulting in long timelines for product approval. Bactiguards mission is to save lives by reducing hospital acquired infections through the application of a patented coating that prevents microbial colonization. While this technology has been widely available in the world for many years following approval by the FDA in the USA, as well as in Europe through CE mark, our goal has been to extend this technology to China and other regions. In this regard, studies in Hong Kong paved the way to our recent China approval, suggesting the value of joint studies in Hong Kong and China partners to more efficiently gain approval and distribution of medical devices. This short presentation will highlight the steps involved and note the outcomes from this partnership, that includes partners who are now actively distributing Bactiguard coated catheters throughout China.

Michael SJÖSTRÖM

Co-Founder and Chief Investment Officer
Sectoral Asset Management
Geneva, Switzerland

Mr. Sjöström founded Sectoral Asset Management with Jérôme Pfund in 2000. Prior to establishing Sectoral, Mr. Sjöström worked for two Swiss banks and, in 1993, joined Pictet & Cie in Geneva as a pharmaceutical analyst. From 1994 until October 2000, he was the Portfolio Manager of Pictet Fund-Biotech and head of the pharma analyst team.
Mr. Sjöström graduated in 1987 from the University of St.Gallen with an MBA in Finance and Economics. He obtained his CFA charter in 1996.
In 1996, Mr. Sjöström co-founded the Swiss Society for Investment Professionals, the Swiss local society of the CFA Institute (formerly known as the Association for Investment Management and Research - AIMR).

NOTES

China Oncology – Overseas Technology Acquisition Heating Up

Access to healthcare has been a key political priority in China. At the same time, cancer incidence has been on the rise, with prevalence and mortality rates often above worldwide averages. Logically, oncology has been designated as a therapeutic area of priority. In parallel, innovation is also political priority. While the most used oncology drugs in China remain traditional chemotherapeutics, the use of novel therapeutic modalities including targeted agents and immuno-oncology drugs is on the rise. Local drug companies and distributors are seeking to in-license these treatments for the Chinese markets. At the same time, local biopharmaceutical companies are developing "made in China" next generation oncology drugs setting the stage for an export of cutting edge cancer therapeutics.

Xiaolin ZHANG

CEO
Dizal/Joint Astrazeneca-China Newcoirector, Innovation Center China, AstraZeneca
Shangai, China

Dr. Xiaolin Zhang is the founder and CEO of Dizal Pharmaceutical Co.
Dr. Zhang started Dizal Pharmaceutical in 2017. Prior to that, he was the global vice president and the head of the AstraZeneca Innovative Medicine and Early Development Asia. Dr. Zhang has over 20 years of experiences in drug discovery and development. He made significant contributions to several drugs in market or under clinical development.
Dr. Zhang earned his PhD in molecular genetics from Oregon State University, USA and continued his academic career at Harvard Cancer Center, Harvard Medical School, and the BioMolecular Engineering Research Center, Boston University.

NOTES

Dizal – a Joint Venture Between China Local Innovation and Multinational Pharmaceutical Company

The Innovation Center China (ICC) is one of the four discovery and early development centers with AstraZeneca global R&D organization. Established in 2006, the ICC has established itself as one of the leading drug discovery and development center in China. The center delivered several drugs that have been approved or currently under clinical development. In addition, it has published over 120 high quality publications and multiple high impact papers in Nature, Science, Lancet, JCO, etc. In October 2017, ICC, with funding support from China Future Fund, became a full independent company, which represents an unique model for localized innovation from a global pharmaceutical company.

SPEAKER & CHAIR LIST

CHEN Zhenming
Nuffield Department of Population Health, University of Oxford
OXFORD, UK
zhengming.chen@ndph.ox.ac.uk

CHIEN Kenneth R.
Department of Cell & Molecular Biology & Medicine, Karolinska Institute
STOCKHOLM, SWEDEN
kenneth.chien@ki.se

DZAU Victor J.
National Academy of Medicine
WASHINGTON, USA
victor.dzau@duke.edu

FRITSCHE-DANIELSON Regina
Department, IMED Biotech Unit Cardiovascular and Metabolic diseases, AstraZeneca
getintouch@astrazeneca.com

GAN Li-Ming
CVMD Early Clinical Development, AstraZeneca
LONDON, UK
Ming.Gan@astrazeneca.com

GEORGIADIS Christos
Université Catholique de Louvain
LOUVAIN LA NEUVE, BELGIUM
christos.georgiadis@uclouvain.be

JAKOBSSON Lars
Department of Medical Biochemistry and Biophysics, Karolinska Institutet
STOCKHOLM, SWEDEN
lars.jakobsson@ki.se

KWONG Ava
Division of Breast Surgery, The University of Hong Kong
HONG KONG, CHINA
avakwong@hku.hk

LAUGWITZ Karl-Ludwig
MUENCHEN, GERMANY
klaugwitz@med1.med.tum.de

LEUNG Gabriel M.
Division of Community Medicine and Public Health Practice, Li Ka Shing Faculty of Medicine, The University of Hong Kong
HONG KONG, CHINA
deanmed@hku.hk

LEVINE James A.
Fondation IPSEN
BOULOGNE BILLANCOURT, FRANCE
james.levine@ipsen.com

LIU Jinfen
Shanghai Children's Medical Center
SHANGHAI, CHINA
scmcmud@online.sh.cn

LO Dennis
Department of Chemical Pathology, The Chinese University of Hong Kong
HONG KONG, CHINA
loym@cuhk.edu.hk

LUNG Maria
Laboratory of Cancer Molecular Genomics, The University of Hong Kong
HONG KONG, CHINA
mlilung@hku.hk

MAK Tak W.
Ontario Cancer Institute,
TORONTO, CANADA
tmak@uhnres.utoronto.ca

MARSHALL Andy
Nature Biotechnology
NEW YORK, USA
andymarshall@me.com

MASUCCI Maria
Department of Cell and Molecular Biology,
STOCKHOLM, SWEDEN
Maria.Masucci@ki.se

MOK Tony
Department of Clinical Oncology, The Chinese University of Hong Kong
HONG KONG, CHINA
tony@clo.cuhk.edu.hk

NILSSON Nina
BACTIGUARD
TULLINGE, SWEDEN
nina.nilsson@bactiguard.se

SJÖSTRÖM Michael
Sectoral Asset Management
MONTREAL, CANADA
Michael@sectoral.com

SMITH Orla M.
Editorial Department, AAAS/ Science Translational Medicine
WASHINGTON, USA
osmith@aaas.org

TAIPALE Jussi
Genome-Scale Biology Research Program & Institute of Biomedicine,
HELSINKI, FINLAND
jussi.taipale@helsinki.fi

TAM Paul K.H.
Paediatric Surgery Division, Li Ka Shing Faculty of Medicine, The University of Hong Kong
HONG KONG, CHINA
paultam@hku.hk

TANCREDI David
Fondation LEDUCQ
BOSTON, USA
contact@flcq.org

WIMAN Klas
Department of Oncology-Pathology, Karolinska Institute
STOKCHOLM, SWEDEN
Klas.Wiman@ki.se

XIAO Rui-Ping
Laboratory of Signal Transduction, Institute of Molecular Medicine, Peking University
BEIJING, CHINA
xiaor@grc.nia.nih.gov

ZHANG Xiaolin
AstraZeneca
LONDON, UK
Xiaolin.Zhang@astrazeneca.com

PARTICIPANT LIST

NAME		Department/Faculty	Organization	Email
BRIDGET LEIGH	Annballaw	School of Chinese Medicine/ Faculty of Medicine	The University of Hong Kong	aleighwalsh@connect.hku.hk
CAO	Wangnan	Department of Dentistry	The University of Hong Kong	wncao@hku.hk
CHAN	Andrew		Computer Science	Andrew.koonkit.chan@gmail.com
CHAN	Camie		Novoheart Limited	camie.chan@novoheart.com
CHAN	Hoi Wai	Faculty of Medicine	The Chinese University of Hong Kong	water0210@gmail.com
CHAN	Brandon	Applied Biology and Chemical Technology	The Hong Kong Polytechnic University	16900395r@connect.polyu.hk
CHAN	Chun Ho	Pediatric & Adolescent Medicine	The University of Hong Kong	ben0910@hku.hk
CHAN	Chi-on	ABCT	POLYU	on.chan@polyu.edu.hk
CHANG	Xiaoyue	The Faculty of Engineering	The University of Hong Kong	u3004925@connect.hku.hk
CHEN	Guanghua	Department of Medicine	The University of Hong Kong	dr.g.chen@hku.hk
CHEN	Iris Rosa	Department of Medicine	The University of Hong Kong	irischen@hku.hk
CHEN	Sijie	Ming Wai Lau Centre for Reparative Medicine (MWLC)	Karolinska Institutet	sijie.chen@ki.se
CHEN	Lijia	Department of Medicine	HKU QMH	chenlijia.equal@gmail.com
CHEUK	Isabella	Department of Surgery	The University of Hong Kong	isacheuk@hku.hk
CHOY	Lok Yee Lois		The University of Hong Kong	u3518141@connect.hku.hk
CHU	KM	Department of Surgery	The University of Hong Kong	chukm@hku.hk
CHU	Ying Kwan	Department of Microbiology	The University of Hong Kong	chuyingkwan16@gmail.com
DENG	Ruixia	School of Chinese Mediicine	The University of Hong Kong	rxdeng@hku.hk
DONG	Xiaoli	ABCT	The Hong Kong Polytechnic University	xiaoli.dong@polyu.edu.hk

FENG		School of Blomedical Sciences	Li Ka Shing Faculty of Medicine	fzfc1027@hku.hk
GAO	Ryan	Dr. Li Dak-Sum Research Centre	The University of Hong Kong	ryanko@hku.hk
GAO	Bin	Dept of Medicine	Queen Mary Hospital	8823317@qq.com
GAO	Ge	Li Ka Shing Faculty of Medicine	School of Biomedical Sciences	gaoge26@connect.hku.hk
HASSAN	Ayon Ahmed	School of Biological Sciences	The University of Hong Kong	ayonhassan@gmail.com
HE	REGINA	Department of Clinical Oncology	The University of Hong Kong	reginahe@hku.hk
HO	Daniel	Department of Pathology	The University of Hong Kong	dwhho@hku.hk
IN	Chou Hou	Department of Medicine	The University of Hong Kong	oscarchou211@yahoo.com.hk
IP	Ho-Wan	Department of Pathology	The University of Hong Kong	howanip@hku.hk
JOHNSTON	Janice	School of Public Health	The University of Hong Kong	jjohnsto@hku.hk
KEI	Wing wong		AJ-Great Limited	
KEUNG	Wendy	Dr. Li Dak-Sum Research Centre	The University of Hong Kong	wkeung@hku.hk
KWAN	Alex	Department of Medicine	The University of Hong Kong	acykwan@hku.hk
KWOK	HH	Department of Medicine	The University of Hong Kong	kwokh@hku.hk
KWOK	Gerry	medicine	qmh	gggjerry@gmail.com
LAM	Maria		AJ-Great Limited	19710901marialam@gmail.com
LAM	Yin Yu	Department of Paediatrics and Adolescent Medicine	The University of Hong Kong	h1351821@hku.hk
LAM	Terence	N/A	NF Trinity Capital	terence.lam@nftcapital.com
LAM	Janet	Department of Public Health	The University of Hong Kong	janetltk@hku.hk
LAN	Xinmiao	Department of Dentistry	The University of Hong Kong	miao0826@hku.hk
Law	Wai Ki		The University of Hong Kong	kikilaw@hku.hk
LEE	Jetty	School of Biological Sciences	The University of Hong Kong	jettylee@hku.hk
LEE	Chi Wai	Department of Biomedical Sciences	The University of Hong Kong	chiwai.lee@hku.hk
LEON	Thomas	Dr. Li Dak-Sum Research Centre	The University of Hong Kong	tleon@hku.hk
LEUNG	Hei Ming	Department of Medicine	The University of Hong Kong	judyaming_hk@yahoo.com.hk

LI	Linxian	Ming Wai Lau Centre for Reparative Medicine	Karolinska Institutet	linxian.li@ki.se
LI	Yafei	Department of Pharmacy	The University of Hong Kong	liyafei0@connect.hku.hk
LIN	Geng	Dr. Li Dak-Sum Research Centre	The University of Hong Kong	genglin@hku.hk
LIU	Jingjing	Department of Medicine	Li Ka Shing Faculty of Medicine	liujj93@hku.hk
LUI	Kelvin	Department of Medicine	The University of Hong Kong	kwklui@connect.hku.hk
Ma	Nuoying	Department of Science	The University of Hong Kong	u3514119@connect.hku.hk
MAK	Eugene	Faculty of Business and Economics	The University of Hong Kong	u3549226@connect.hku.hk
NG	Ka Hing	Department of Physics	The University of Hong Kong	khng57@hku.hk
NG	Lui	Department of Surgery	The University of Hong Kong	luing@hku.hk
NGAI	Lau Ming	Department of Medicine	The University of Hong Kong	queenmnl@connect.hku.hk
NI	Leng	Vascular Surgery	Queen Mary Hospital	lni1@hku.hk
OH	Grace	Department of Science	The University of Hong Kong	lindajieun@googlemail.com
PANG	Herb	School of Public Health	The University of Hong Kong	herbpang@hku.hk
POON	Ellen	School of Biomedical Sciences	The University of Hong Kong	ellpoon@hku.hk
QIU	Xianxiu	ABCT	The Hong Kong Polytechnic University	xxqiu@polyu.edu.hk
SHEN	Mimi		The Hong Kong Polytechnic University	shenmimike@gmail.com
SHIN	Vivian	Department of Surgery	The University of Hong Kong	vyshin@hku.hk
SHUM	Nika	School of Public Health	School of Public Health	nikashum@gmail.com
SO	Wing Yin Mary	Faculty of Science	The University of Hong Kong	mary0303@connect.hku.hk
SONG	Hongping	Department of ultrasound	Xijing Hospital	371956@qq.com
SOU	Chiam		Asia Institute of International Financial Law	souchiam@yahoo.com
SU	Richard	Oral and Maxillofacial Surgery, Faculty of Dentistry	The University of Hong Kong	richsu@hku.hk
SU	Yiting	Division of Life Science	The University of Hong Kong of Scienceysuah@connect.ust.hk and Technology	
SU	Ze-Zhuo	Department of Surgery	The University of Hong Kong	zezhuo@hku.hk

SUEN	Christine		Bio-Cancer Treatment	dr.kmsuen@gmail.com
Sun	Liangzhan	Department of Clinical Oncology	The University of Hong Kong	u3005197@hku.hk
SZE	Kong Hung	Department of Microbiology	The University of Hong Kong	khsze@hku.hk
SZETO	Irene	School of Biomedical Sciences	The University of Hong Kong	yyszeto@hku.hk
TAI	William	ABCT	The Hong Kong Polytechnic University	william-cs.tai@polyu.edu.hk
TANG	Clara	Department of Surgery	The University of Hong Kong	claratang@hku.hk
TANG	Ying	Clinical Oncology	The University of Hong Kong	u3005202@hku.hk
TO		School of Biological Sciences	The University of Hong Kong	sal_to@hotmail.com
TONETTI	Maurizio	Periodontology, Dental Faculty	The University of Hong Kong	tonetti@hku.hk
TONG HOI YEE	Henry	Department of Pharmacology and Pharmacy	The University of Hong Kong	henry002@hku.hk
TSANG	KM	Department of Mathematics	The University of Hong Kong	kmtsang@maths.hku.hk
TSE	Eric	Department of Medicine	The University of Hong Kong	ewctse@hku.hk
TSE	Lap Hang	LIFS	The University of Hong Kong of Science and Technology	Lhtseaa@ust.hk
UD DIN	Rahman	Division of Life Science	The University of Hong Kong of Science and Technology	rudin@connect.ust.hk
VACKOVA	Dana	School of Public Health	The University of Hong Kong	vackova@hku.hk
WAI	Sing Fai		Pure Innovation Biotech Limited	sfwai@pureinnovationbiotech.com
WANG	Jiguang	Division of Life Science	The University of Hong Kong of Science and Technology	jgwang@ust.hk
WANG	Weiping	Dr. Li Dak-Sum Research Centre	The University of Hong Kong	wangwp@hku.hk
WANG	Fan	Li Ka Shing Faculty of Medicine	School of Public Health	fanwang2@hku.hk
WANG	Hailun	School of Public Helath	The University of Hong Kong	u3005316@connect.hku.hk
WANG	Ni	School of Biomedical Sciences	The University of Hong Kong	u3003898@connect.hku.hk
WEI	Xueqin	ABCT	PolyU	xueqin.wei@connect.polyu.hk
WONG	Gabriel		Novoheart Limited	gabriel.wong@novoheart.com
WONG	Nicholas	Research & Development	Nanomab	nicholaswong@nano-mab.com
WONG	Nicodemus	Ming Wai Lau Centre for Reparative Medicine	Karolinska Institutet	nicodemuswong729@gmail.com
WONG	Victor		Oncoseek	victor@oncoseek-hk.com

WONG	Vivian	School of Chinese Medicine	The University of Hong Kong	vcwwong@hku.hk
WONG	Winnie	Public Health Division	Ferring Pharmaceuticals	winnie.wong@ferring.com
WONG	Man Sau	Applied Biology and Chemical Technology	The Hong Kong Polytechnic University	Bcmswong@polyu.edu.hk
WU	Ai Min	Orthopaedics	University of Hong Kong	aiminwu2005@163.com
YAN	Clare	Applied Biology and Chemical Technology	The Hong Kong Polytechnic University	clare.yan@polyu.edu.hk
YANG	Dan	Department of Chemistry	The University of Hong Kong	yangdan@hku.hk
YANG	Edward S.	The Facility of Engineering	The University of Hong Kong	esyang123@hotmail.com
YANG	Mingxiao	School of Chinese Medicine	The University of Hong Kong	mingxiaoyang@hotmail.com
YANG	LEI	School of Chinese Medicine	The University of Hong Kong	yl2003vx4@gmail.com
YAO	Chunyan	Department of Microbiology	QMH	yaochunyan@tmmu.edu.cn
YAO	Kwok Ming	Sch of Biomed Sc/LKS Fac of Med	The University of Hong Kong	kmyao@hku.hk
YE	Sen	Department of Chemistry	The University of Hong Kong	easonyesen@gmail.com
YOUNG	Rosie	Department of Medicine	The University of Hong Kong	rttyoung@hku.hk
YU	Dandan		The University of Hong Kong	yudd@connect.hku.hk
YU	Shuk Yin	Department of Medicine	The University of Hong Kong	angelysy@hku.hk
YUM	Samson Hin Hei	MBBS	The University of Hong Kong	samsonyum@gmail.com
YUNG	Tony	Genetics Biotech Development Unit	Sanomics Genetics Lab	tonyyung@xcelom.com
ZHANG	Wen	School of Nursing	The University of Hong Kong	u3005105@hku.hk
ZHENG	Zongli	MWLC	Karolinska Institutet	zongli.zheng@ki.se
ZHUANG	Xuehan	Department of Surgery	The University of Hong Kong	sunnyzxh@connect.hku.hk
RICHARD YICK, BSN, ONC		Staff RN	Boulder Community Hospital, CO, U.S.A.	hkg130@yahoo.com
Yan Kang		SPH	The University of Hong Kong	ken1024@hku.hk
Ruhi Soni		Science	School of Biological Sciences	ruhisoni@hku.hk
Vasu Saini		Life Sciences	Hong Kong University of Science and Technology	vsaini@connect.ust.hk
GuYishan		LIFS	HKUST	yguak@connect.ust.hk

NOTES

NOTES

NOTES

Days of Molecular Medicine
Global Foundation

Karolinska Institutet

FONDATION IPSEN

香 港 大 學
THE UNIVERSITY OF HONG KONG