

University of Macau - Dr. Stanley Ho Medical Development Foundation

“Set Sail for New Horizons, Create the Future” Grant

DISTINGUISHED SCHOLARS FORUM 2023

8 Nov 2023

Programme Booklet

Venue Wi-Fi: User ID: shforum2023 | Password: shforum2023



澳門大學
UNIVERSIDADE DE MACAU
UNIVERSITY OF MACAU



健康科學學院
Faculdade de Ciências da Saúde
Faculty of Health Sciences



何鴻燊博士醫療拓展基金會
Dr. Stanley Ho Medical Development Foundation



Dr. Stanley Ho Medical Development Foundation “Set Sail for New Horizons, Create the Future” Grant

Background of Dr. Stanley Ho Medical Development Foundation

Dr. Stanley Ho Medical Development Foundation (SHMDF), founded in January 2005, is a non-profit juridical person which has been declared of public administrative utility, registered at the Identification Department of the Government of the Macau Special Administrative Region. Donations to the Foundation are deductible from the donor’s income up to 2% of the gross revenue generated by sales/services.

Mission of the Foundation

The aim of the Foundation is to promote, develop and finance socially beneficial, educational, academic, economical, charitable, cultural, recreational, athletic, scientific and technological research activities, whereby the knowledge level and quality of the above activities may be enhanced — especially those activities relating to improving the quality of medical service in Macau and other regions in China and financing the training of medical practitioners and workers in the techniques and technologies in their areas of expertise.

Establishment of Dr. Stanley Ho Medical Development Foundation “Set Sail for New Horizons, Create the Future” Grant

To celebrate the 40th anniversary of the University of Macau (UM), the Foundation established a designated fund titled “Set Sail for New Horizons, Create the Future” Grant which was first opened for applications in 2021, granting MOP1 million per year for 10 years. The allocated funding is to support the nurturing of talents in the areas of health sciences and big data healthcare applications, and to support young scholars to venture into innovation and breakthroughs in their research areas.

Purpose of the Distinguished Scholars Forum

Since 2022, UM and the Foundation have jointly held the Distinguished Scholars Forum for the awardees to share their research achievements under the grant programme. In addition, experts and scholars from China and abroad have been invited to deliver talks on their latest research results. These academic exchange activities provide a platform for experts and scholars to showcase the latest research progress and applications, as well as an opportunity for researchers and students to interact and explore collaboration with scholars from home and abroad.

All in all, the “Set Sail for New Horizons, Create the Future” projects have achieved remarkable progress and significant results in terms of research promotion, academic exchange and talent nurturing. It will continue to encourage the development of health sciences at UM.

PROGRAMME RUNDOWN

Welcome Remarks

14:30-14:40

Prof. Wei GE

Vice Rector (Research), University of Macau

Mr. Wing Ming Patrick HUEN

Chairman, Board of Trustees and Board of Directors,
Dr. Stanley Ho Medical Development Foundation

Guest Speaker's Presentation

Chair: Prof. Chuxia DENG (Dean, Faculty of Health Sciences, University of Macau)

14:40-15:20

Prof. Gang LI

Professor, Faculty of Medicine, The Chinese University of Hong Kong
Distraction Histogenesis: Insights and Novel Clinical Applications

Grantees' Sharing of Research Achievements

15:20-15:35

Prof. Koon Ho WONG

Associate Professor, Faculty of Health Sciences, University of Macau
Spore Germination – An Ideal Target for Antifungal Drug Discovery

15:35-15:50

Prof. Yunlu DAI

Associate Professor, Faculty of Health Sciences, University of Macau
Coordination Biomaterials for Cancer Therapy

15:50-16:05

Prof. Qi ZHAO

Associate Professor, Faculty of Health Sciences, University of Macau
Antibody-based Immune-cell Therapy Against Cancer

16:05-16:20

Prof. Ruibing WANG

Professor, Institute of Chinese Medical Sciences and
Faculty of Health Sciences, University of Macau
Supramolecularly Engineered Cells for Therapeutics of Multiple Diseases

Closing Remarks

16:20-16:25

Prof. Chuxia DENG

Dean, Faculty of Health Sciences, University of Macau

16:25-17:00

Refreshment & Exchange

Distraction Histogenesis: Insights and Novel Clinical Applications

Invited Speaker

Prof. Gang Li



Professor, Faculty of Medicine, The Chinese University of Hong Kong
Researcher, Li Ka Shing Institute of Health Sciences, The Chinese University of Hong Kong
Researcher, Shenzhen Research Institute, The Chinese University of Hong Kong

Biography

Prof. Gang LI is the Professor of Department of Orthopaedics and Traumatology of The Chinese University of Hong Kong (CUHK) Faculty of Medicine. His research interests are biology and clinical applications of distraction histogenesis and stem cells. He has published more than 290 papers in journals such as *Biomaterials*, *Nature Communications*, etc., 15 monographs, and edited 2 books. His papers have been cited more than 21,000 times with an H-index of 73. He is the Executive Deputy Editor-in-chief of *Journal of Orthopedic Translation*, editorial board member of *Bone and Joint Research*, *Bone*, *Journal of Orthopedic Research*, etc. He is a visiting professor at Monash University Australia, University of Science, Malaysia, Nanjing Medical University, etc. His work received several awards including 1st Class Award in Science Advances, Ministry of Science and Technology, PR China (2021); 2nd Class Award in Medical Science and Technology, China Medical Association (2017); 1st Class Research Award in Science and Technology, Ministry of Education, China (2014). He is elected as Fellow of International Combined Orthopaedic Research Societies (FIORS) in 2016 and Fellow of American Orthopaedic Research Society (FORS) in 2021. From 2020 to 2022, he has been on the list of the world's top 2% scientists (ranked among the 1% of the world's top scientists in 2022). In 2023, he is ranked 9th of the top 100 scholars in the field of orthopedic surgery in PR China. In 2023, Prof Li is ranked 37 among the best CUHK Professors across all disciplines over 500 professors and ranked 2618 (world) and 50 National of the best scientists in the Biology and Biochemistry category (<https://research.com/university/the-chinese-university-of-hong-kong>).

Abstract

Distraction histogenesis (DH) techniques have been widely accepted and practiced in orthopedics, traumatology, and craniofacial surgery over the last two decades, using DH methods, many previously untreatable conditions have been successfully managed with outstanding clinical outcomes. It is generally accepted that mechanical stimulation is the key in promoting and maintaining tissues' regenerating capacities. Under normal circumstances with adequate support of postoperative physiotherapy, DH treatment has good clinical outcome and needs no additional intervention(s). Being a great surgical technique for skeletal tissue repair and regeneration, DH also has a wider implication in understanding body's self-repair and self-regeneration potentials, and its new clinical applications are extended to functional tissue engineering, hip reconstruction surgery, management of vascular diseases and cosmetic limb lengthening surgery, as well as neurological disorders. DH theory opens a new page of human biology and physiology, its wider applications will continue to bring the world more surprises.

Spore Germination – An Ideal Target for Antifungal Drug Discovery

Grantee

Koon Ho WONG



Associate Professor, Faculty of Health Sciences, UM

Biography

Prof. Koon Ho WONG is Associate Professor in the Faculty of Health Sciences of UM. Prof. Wong obtained his Hon BSc and PhD degrees in the Department of Genetics at the University of Melbourne in Australia and post-doctoral training at Harvard Medical School in USA. He is a fellow of the Croucher Foundation in Hong Kong. Prof. Wong is interested in gene regulation and fungal physiology. He and his research team have published over 60 papers in reputable journals including *Nature Microbiology*, *Nature Methods*, *Nature Communications*, *Molecular Cell*, *Nucleic Acids Research*, *PNAS*, *Genes and Development*, *eLife*, *mBIO*, etc..

Abstract

Deadly fungal infections usually affect individuals with a compromised immune system, such as cancer, organ transplant and AIDS patients. However, the recent pandemic has revealed that COVID-19 patients are highly susceptible to life-threatening fungal infections. Since the COVID-19 coronavirus is likely to be here for the long term and will eventually infect all of us, fungal infections could threaten everyone. Currently, there are limited effective drugs to treat fungal infections, creating an urgent need for new antifungal regimens. Many pathogenic fungi undergo asexual development to produce large quantities of stress-resistant conidia which are tiny particles that can easily spread in the environment. These airborne conidia are the main culprits behind fungal infections. They can remain in a dormant state and only germinate when favourable conditions are present. The germination of conidia is the first essential step in establishing an infection. Inhibiting this fungal-specific process would be a safe and effective strategy to prevent fungal infections. How conidia regulate their dormancy and germination is not known. Their recent publication has brought about a significant change in our understanding of how conidia remain dormant and has provided important clues about how germination is controlled. They are now studying the molecular details of conidial dormancy and germination to identify new effective ways to inhibit fungal growth. Prof. Wong's ultimate goal is to develop a safe and effective method to prevent and treat fungal infections.

Coordination Biomaterials for Cancer Therapy

Grantee

Yunlu DAI



Associate Professor, Faculty of Health Sciences, UM

Biography

Prof. Yunlu DAI is Associate Professor in the Faculty of Health Sciences of UM. He was awarded the Excellent Young Scientists funded by National Natural Science Foundation of China in 2022. He received his PhD degree in 2014 from the Changchun Institute of Applied Chemistry, Chinese Academy of Sciences. After his postdoctoral research at the University of Melbourne and National Institutes of Health, he initiated an independent research programme at University of Macau as an assistant professor in 2018. In 2022, he got an early promotion to associate professor. Since Prof. Dai joined FHS in 2018, he has made breakthroughs and ground-breaking progresses in the field of biomaterials and nanomedicine, and published 27 SCI papers as the corresponding author, 25 of these in the Q1 ranking, including *Nature Communications*, *Journal of the American Chemical Society*, *Angewandte Chemie International Edition*, *Advanced Materials*, *Advanced Functional Materials*, *Advanced Science* and *Biomaterials*.

Abstract

Metal-Phenolic Networks (MPNs), which make use of the coordination between metal ions and phenolic molecules, have emerged as promising materials for nanomedicine. Compared with other materials, MPNs have several potential advantages, including pH responsiveness, negligible cytotoxicity. Additionally, the phenolic groups in the materials can be functionalised to meet specific applications. Prof. Dai constructed a series of polyphenol-based nanoplatforms for combination cancer immunotherapy. These nanoplatforms are stable under normal physiological environment and release therapeutic agents in the tumour site. The MPN can enhance anti-tumour immune response by various strategies by exploiting the tumour microenvironment. MPN-based nanoplatforms can evoke highly efficacious cancer immunosurveillance while minimising systemic side effects. The polyphenol-based theranostics nanoplatforms establish a novel promising strategy for cancer treatment.

Antibody-based Immune-cell Therapy Against Cancer



Grantee

Qi ZHAO

Associate Professor, Faculty of Health Sciences, UM

Biography

Prof. Qi ZHAO is Associate Professor in the Faculty of Health Sciences of UM, the Associate Director of Immunotherapy Branch of Guangdong Precision Medicine Application Association. Prof. Zhao has long worked in antibody drug development and cellular immunotherapy in oncology. He has published about more than 90 papers in many peer-reviewed journals, such as *Nature Communications*, *Leukemia*, *Journal of Hematology & Oncology*, and *Journal of Biological Chemistry* and owns 17 invention patents from China and USA. He has received the US NIH Federal Technology Transfer Award and Shenzhen Overseas High-Caliber Personnel. Recently, he has been granted by a National R&D Key Grant from the Ministry of Science & Technology and three fundings from Science and Technology Development Fund (FDCT), Macao SAR. The recent findings by Prof. Zhao's laboratory have been published in the prestigious journal *Nature Communications* (2022), *Journal of Hematology & Oncology* (2021) and *Small* (2021).

Abstract

Immunotherapy is a promising approach to cancer treatment that harnesses the body's own immune system to combat cancer. Through in silico-driven humanized antibody technology, novel humanized monoclonal antibodies targeting tumour-associated markers have been identified. These antibodies can be tailored to eliminate tumour cells by leveraging mechanisms such as antibody-dependent cellular cytotoxicity (ADCC) or antibody-drug conjugation (ADC). By using these antibodies as carriers, bispecific antibodies can be designed to target both tumour antigens and specific markers on immune cells, leading to the lysis of tumours. Furthermore, all of these antibodies can be restructured to create Chimeric Antigen Receptors (CARs) for redirecting T or NK cells.

Supramolecularly Engineered Cells for Therapeutics of Multiple Diseases

Grantee

Ruibing WANG



Professor, Institute of Chinese Medical Sciences and Faculty of Health Sciences, UM

Biography

Prof. Ruibing WANG, Professor of Institute of Chinese Medical Sciences and Faculty of Health Sciences of UM, obtained his BSc and PhD degrees from Jilin University (China) and Queen's University (Canada), respectively. He joined UM in 2014, after working in the biotech industry for five years in Canada. Prof. Wang's research interest is the development of supramolecular pharmaceuticals and cytopharmaceuticals. Since joining UM, he has published over 100 research papers on *Nature Communications*, *Science Advances*, *Matter*, *Advanced Science*, *Journal of the American Chemical Society*, *Angewandte Chemie International Edition*, *Advanced Materials*, etc, with a total citation of over 9500 times and H-index of 55 (google scholar). His efforts have been recognised by several prestigious awards and honors, including 2018 Macao Science and Technology Award - Natural Science Award, 2019 UM Teaching Excellence Award, 2020 Macao Science and Technology Award - Technological Invention Award, and 2022 Macao Science and Technology Award - Natural Science Award. He actively serves as editorial board member of *Chinese Chemical Letters*, and editorial advisory board member of *ACS Applied Bio Materials*. He has become elected Fellow, the Royal Society of Chemistry, since November 2020. He also serves as a member in the Technical Committee of Supramolecular Chemistry of Chinese Chemical Society.

Abstract

Cells are a basic unit of living organisms and using them as drug carriers and therapeutic agents has unique advantages. For instance, it can significantly improve the targeting efficiency due to the homing effects of selected cells. Currently, cell modification or bio-conjugation often relies on genetic engineering or covalent chemistry approach, which are costly and time-consuming. During the past decade, we have developed a series of supramolecularly engineered cells for targeted therapy of multiple diseases, including cancer, ischemic stroke and infectious diseases.

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