# Cell Fate & Disease

# UM-Tongji Frontiers Science Center Joint Symposium



## 11 May 2024



· 澳 門 大 勞 UNIVERSIDADE DE MACAU UNIVERSITY OF MACAU



## UM-Tongji Frontiers Science Center Joint Symposium

11 May 2024

## **Table of Content**

Table of Content	Page 1
Programme Rundown	Page 2
Schedule of Scientific Talks	Page 3-4
Speakers' Biography	Page 5 - 20
Contact Information	Page 21

## Programme Rundown

Date	:11 May 2024
Location	: Lecture Hall G013, N21 Research Building, UM

Time	Event
08:30 – 09:00	Registration
09:00 – 09:30	Opening Ceremony
	09:00 – 09:10 Welcome Remarks by UM Vice Rector (Research) Wei GE
	09:10 – 09:20 Welcome Speech by Prof. Shaorong GAO
	09:20 – 09:25 Souvenir Presentation
	09:20 – 09:25 Group Photo
09:30 - 11:00	Scientific Talks (Morning Session 1)
11:00 – 11:20	Coffee break
11:20 – 12:40	Scientific Talks (Morning Session 2)
12:50 – 14:20	Lunch Break
14:30 – 16:00	Scientific Talks (Afternoon Session 1)
16:00 – 16:20	Coffee break
16:20 – 17:40	Scientific Talks (Afternoon Session 2)
17:40 – 17:50	Closing Remarks by Prof. Chuxia DENG

## **Morning Session**

## Moderator: Prof. Chuxia DENG

Time	Talk
09:30 – 10:00	Epigenetic Regulation of Early Embryo Development and Somatic Cell Reprogramming by Prof. Shaorong GAO, Tongji University
10:00 – 10:20	Elucidating how Triple Negative Breast Cancer Cells Gain Malignancy after Interacting with Macrophages by Prof. Kathy Qian LUO, University of Macau
10:20 – 10:40	Reconstitution of a Soft Bone Marrow Organoid for Hematopoietic Stem Cell Rejuvenation by Prof. Rui YUE, Tongji University
10:40 – 11:00	Engineering a Glycan Matrix to Reshape Spleen Tissue for Ectopic Liver Regeneration by Prof. Chunming WANG, University of Macau
11:00 - 11:20	Coffee Break
11:20 – 11:40	Aging and DNA Repair by Prof. Zhiyong MAO, Tongji University
11:40 - 12:00	TET Dioxygenases in Pancreatic Cell Fate Determination by Prof. Ruiyu XIE, University of Macau
12:00 – 12:20	Epigenetic Reprogramming in Murine Somatic Cell Nuclear Transfer by Prof. Chong LI, Tongji University
12:20 – 12:40	hESC-derived MSCs for Therapeutic Application, Chimeric Study, and Cancer Research by Prof. Ren-He XU, University of Macau

## **Afternoon Session**

## Moderator: Prof. Ren-He XU

Time	Talk
14:30 – 15:00	Strategies to Identify and Overcome Cancer Drug Resistance by Prof. Chuxia DENG, University of Macau
15:00 – 15:20	Pancreatic β-cell Protection in Diabetes: Human Tissue-based Novel Therapeutic Target Identification and Drug Discovery by Prof. Weida LI, Tongji University
15:20 – 15:40	Lineage Specific Differentiation from Human Pluripotent Stem Cells in Chemically Defined Conditions by Prof. Guokai CHEN, University of Macau
15:40 - 16:00	Decoding the Mechanisms of Cardiac Diseases and Regeneration by Prof. Ke WEI , Tongji University
16:00 - 16:20	Coffee Break
16:20 – 16:40	Antibody-based Immune-cell Therapy Against Cancer by Prof. Qi ZHAO, University of Macau
16:40 – 17:00	Strategies for Rebalancing Hematopoiesis against Myocardial Infarction by Prof. Yaozu XIANG, Tongji University
17:00 – 17:20	Metal Coordination Biomaterials for Cancer Therapy by Prof. Yunlu DAI, University of Macau
17:20 – 17:40	Uncovering Chromatin Regulatory Architecture with Transfer Learning by Prof. Yong ZHANG, Tongji University

## **Speaker's Biography**



### **Prof. Guokai CHEN**

Interim Director of Zhuhai UM Science & Technology Institute Professor of University of Macau

Prof. Guokai CHEN is a Professor in the Faculty of Health Sciences, University of Macau. Prof. Chen's group focuses on technology development for human pluripotent stem cells (hPSC) and their clinical applications. He has developed the next generation of hPSC culture condition and differentiation methods to produce functional cells for potential cell therapy. Prof. Chen's inventions have been widely used in stem cell field, including E8 cell culture system. Prof. Chen's group currently studies the molecular mechanisms associated with cardiomyocyte fate determination. They hope to enhance cardiac induction method for large scale production, which would facilitate cell therapies with cardiomyocytes.

Personal website: https://fhs.um.edu.mo/en/staff/guokai-chen/



**Prof. Yunlu DAI** Associate Professor of University of Macau



Prof. Yunlu DAI is Associate Professor in the Faculty of Health Sciences, University of Macau. He received his PhD degree in 2014 from the Changchun Institute of Applied Chemistry, Chinese Academy of Sciences. After his postdoctoral research, He initiated an independent research programme at University of Macau as an Assistant Professor in 2018. He was promoted to Associate Professor in 2022. He was also awarded the NSFC Excellent Young Scientists Fund (Hong Kong and Macao) in 2022. His research team mainly focuses on multifunctional hybrid nanomaterials for biomedical applications.

Personal website: https://fhs.um.edu.mo/en/staff/yunlu-dai/





## Prof. Chuxia DENG

Dean of Faculty of Health Sciences, University of Macau Chief Scientist of MoE Frontiers Science Center for Precision Oncology, University of Macau Chair Professor of University of Macau

Prof. Chuxia DENG is the Founding Dean of Faculty of Health Sciences and the Chief Scientist of MoE Frontiers Science Center for Precision Oncology, University of Macau. He received MS from Chinese Academy of Sciences in 1984, and PhD from University of Utah in 1992 under the supervision of Prof. Mario R. CAPECCHI, Winner of 2007 Nobel Prize in Physiology or Medicine. After his postdoctoral fellow training at Harvard Medical School, he has been Investigator, Senior Investigator and Chief of Mammalian Genetics Section, Genetics of Development and Disease Branch of National Institute of Diabetes, Digestive and Kidney Diseases (NIDDK) of National Institutes of Health (NIH), USA from 1995 to 2014. Prof. Deng has received numerous awards in recognition of his outstanding achievements in teaching and research, including the NIH-APAO Outstanding Achievement Award (2000, NIH), the Outstanding Overseas Scholar from National Science Foundation (2002, China), NIDDK "You Make A Difference Award" (2005, 2013), and the NIDDK Director's Award (2011). He was elected as a fellow of the American Association for the Advancement of Science (2012). He is the author or coauthor of over 600 papers published in peer-reviewed journals. As at April 2024, Prof. Deng has an H-index at 147 with a total citation approximately 79,000. He is currently Editor-in-Chief of International Journal of Biological Sciences. Prof. Deng has long and successful track record in cancer research, with particular focuses lately on precision oncology, oncogenes and tumour suppressor genes, as well as gene targeting and drug development.

Personal website: <u>https://fhs.um.edu.mo/en/staff/chuxia-deng/</u>



## **Prof. Shaorong GAO**

Academician of the Chinese Academy of Sciences Dean of the School of Life Science and Technology, Tongji University Director of the Frontier Science Center for Stem Cell Research, Ministry of Education, Tongji University



Prof. Shaorong GAO, Academician of the Chinese Academy of Sciences, Dean of the School of Life Science and Technology, Tongji University, Director of the Frontier Science Center for Stem Cell Research, Ministry of Education. He is a recipient of the National Science Foundation for Distinguished Young Scholars, distinguished professor of "The Yangtze River Scholar" of the Ministry of Education, and academic leader of the Innovation group of the National Natural Science Foundation of China. His research focused on the epigenetic regulation mechanism of early embryonic development, somatic cell reprogramming and the translation research of the stem cell. He has conducted several systematic research and achieved multiple innovative results, and published more than 180 papers (more than 9,000 times Citation Frequency) in highprofile journals including Nature, Science, Nature Genetics, Cell Stem Cell, etc. The team's research findings have been highly recognized by domestic and foreign peers, and one is selected as one of the world's top 10 medical breakthroughs, and the other one was the top 10 life sciences in China. He was the first person to win the Second prize of National Natural Science, the Third session of National Innovation Award, the First prize of Natural Science of the Ministry of Education, the First prize of Shanghai Natural Science, Zhou Guangzhao Foundation for Distinguished Young Youths, the Innovation Award of Tan Jiazhen Life Science and the Outstanding Achievement Award of China Society of Cell Biology. The stem cell research team led by Academician Gao won the title of National Huang Danian Teacher Team and Shanghai Youth Civilization etc.

Personal website: https://life.tongji.edu.cn/03/35/c12618a131893/page.htm





### **Prof. Chong LI**

Executive Deputy Director of the Frontier Science Center for Stem Cell Research, Ministry of Education, Tongji University Associate Research Professor of Tongji University

Prof. Chong LI, Associate Research Professor, Master's Thesis Supervisor of Tongji University School of Life Sciences and Technology, Shanghai First Maternity and Infant Hospital, Executive Deputy Director of the Frontier Science Center of Stem Cell Research. Prof. Li is currently as the council member of the Cell and Molecular Microscopy Branch of the Chinese Zoological Society, and the council member of the Stem Cell Research and Application Branch of the Chinese Association of Plastic Aesthetics. He has been engaged in epigenetic regulation of early embryo development and somatic cell nuclear transfer for a long time. In recent years, he led and participated in a number of National Natural Science Foundation and national key research and development programs. He has published nearly 30 academic papers as the first or corresponding (including co-author) author in *Cell Stem Cell, Cell Research, Nature Communications, Protein & Cell, Cell Reports* and other journals. In 2009, he won the National Outstanding self-funded Student Scholarship. Also, he has won many awards in international academic conferences.

Personal website: https://life.tongji.edu.cn/03/4c/c12620a131916/page.htm



#### Prof. Weida LI Professor of Tongji University



Prof. Weida LI, Professor of Translational Medical Center for Stem Cell Therapy and Institute for Regenerative Medicine at Shanghai East Hospital, Frontier Science Center for Stem Cell Research, School of Life Sciences and Technology, Tongji University. His research focuses on cell therapy and novel drug development for diabetes. He has authored a series of papers in prestigious international journals such as Nature Biotechnology, Nature Communications, Science Advances, and Advanced Materials as corresponding (including co-corresponding) or first author. He has applied for several invention patents and collaborates closely with clinical departments to promote the clinical translation of stem cell medicine. As the principal investigator, he has led one project funded by the National Key R&D Program of China, three projects supported by the National Natural Science Foundation of China, two projects sponsored by the Key Project of the Science and Technology Commission of Shanghai Municipality, and an Overseas High-level Young Talents project. He has been honored with prestigious awards such as the Juvenile Diabetes Research Foundation (JDRF) Fellowship. Presently, he serves as a peer reviewer for esteemed journals, including Cell Reports, Journal of Cell Science, Journal of Diabetes, Advanced Science, Cell Research, and Cell Discovery.

#### Personal website:

https://life.tongji.edu.cn/03/2b/c12618a131883/page.htm





## Prof. Kathy Qian LUO

Head of Department of Biomedical Sciences, Faculty of Health Sciences, University of Macau Professor of University of Macau

Prof. Kathy Qian LUO is a full Professor and the Head of the Department of Biomedical Sciences in the Faculty of Health Sciences, University of Macau. Prof. Luo received her BS and MS degrees from Peking University, and PhD degree from the University of British Columbia in Canada. Before joining University of Macau, she has worked in California Institute of Technology in USA, Hong Kong University of Science and Technology, and Nanyang Technological University in Singapore. Prof. Luo's research areas include circulating tumour cells, cancer metastasis, anti-cancer drug development, and study of cell death in sensor zebrafish. Prof. Luo has published 103 papers in many top tire journals including *Science Advances, Advanced Science, Biosensor & Bioelectronics, Pharmacological Research, Cancer Letters, Oncogene*, and *ACS Sensors*. Based on Google Scholar, her total citation is 7,264 times and H-index is 43. She has obtained 8 patents from USA, China, and Singapore. As a PI/Co-PI, she has obtained 35 grants including 1 FDCT Key Grant (MOP 8,500,000) and the total funding is MOP 98 million (US\$ 12 million). She has supervised 9 postdocs, 33 PhD students, 24 MSc students, and 9 Research Assistants.

Personal website: https://fhs.um.edu.mo/en/staff/kathy-luo/



## Prof. Zhiyong MAO

Professor of Tongji University Director of Clinical and Translational Research Center of Obstetrics and Gynecology Hospital affiliated to Tongji University



Prof. Zhiyong MAO, Professor and doctoral supervisor of Tongji University, Director of Clinical and Translational Research Center of Obstetrics and Gynecology Hospital affiliated to Tongji University. He is a recipient of the National Science Foundation for Distinguished Young Scholars, the National Science Foundation for Excellent Young Scholars, overseas high-level young talents, and the outstanding academic leader of Shanghai. Prof. Mao is the deputy director of the aging genetics committee in the Genetics Society of China, the alternate chair of the Chinese Association for physiological sciences, the standing committee member of the Chinese Society of Cell Biology, the standing committee member of aging biology in the Biophysical Society of China, the standing committee member of basic and translational medicine in the Chinese Geriatrics Society. He has got several competitive grants such as the National Science Foundation for Distinguished Young Scholars, the National Science Foundation for Excellent Young Scholars, the Major research plan integration project and National Program on Key Basic Research Project (973 Program for Young Scholars). His laboratory is interested in aging and genome stability. His group has clarified the change of the DNA repair and the regulation mechanisms, and established a series of cell and animal models to study the DNA repair. He has published several papers in high-profile journals such as Science, Nature, Nature Cancer, Nature Communications, PNAS, Nucleic Acids Research, etc.

Personal website: https://life.tongji.edu.cn/03/24/c12618a131876/page.htm





### Prof. Rui YUE

Vice Dean of the School of Life Sciences and Technology, Tongji University

Vice Director of Frontier Science Center for Stem Cell Research, Ministry of Education, Tongji University

Department Chair of Molecular and Cell Biology, Tongji University Professor of Tongji University

Prof. Rui YUE is a tenured Professor of Tongji University. He serves as the Department Chair of Molecular and Cell Biology, Vice Dean of the School of Life Sciences and Technology, and Vice Director of Frontier Science Center for Stem Cell Research. Prof. Yue graduated from Chu Kechen Honors College of Zhejiang University with a BS degree in Bioengineering (2005). He pursued his PhD degree in cell biology at Shanghai Institute of Biochemistry and Cell Biology, Shanghai Institutes for Biological Sciences, CAS, with Prof. Gang PEI. After completing PhD (2011), he conducted postdoctoral research with Dr. Sean MORRISON at UT Southwestern Medical Center, USA (2011-2016). The Yue laboratory is interested in dissecting the mechanisms by which skeletal stem cells are regulated in the bone marrow and the extramedullary regions to finetune skeletogenesis and hematopoiesis, as well as their clinical applications in regenerative medicine. He has published more than 20 papers in high-profile journals such as Cell, Cell Stem Cell, Developmental Cell, Circulation Research, Cell Research, PNAS, EMBO Journal, eLife, Cell Reports and Bone Research. He has got several competitive grants such as the National Key R&D Program of China and the Key Program of National Natural Science Foundation of China, and has been awarded Ray Wu Prize, Damon Runyon Fellowship, and CSSCR Outstanding Principal Investigator in Stem Cell Research.

#### Personal website:

https://life.tongji.edu.cn/03/11/c12618a131857/page.htm



## Prof. Chunming WANG

Director of Research Service and Knowledge Transfer Office, University of Macau Deputy Director of Zhuhai UM Science & Technology Research Institute Professor of University of Macau



Prof. Chunming WANG is a Professor at the Institute of Chinese Medical Sciences and Department of Pharmaceutical Sciences, University of Macau. His research focuses on developing new methods to promote tissue repair, including immunomodulatory biomaterials and therapeutic cells, as supported by over 20 funding grants, such as the Excellent Young Scientist Fund from the National Natural Science Foundation of China (NSFC), Macau Key R&D Projects, Joint Funding Support by the Macao Science and Technology Development Fund and NSFC, as well as industrial funding. He has been awarded the 'Qi-Huang' Youth Scholarship by the State Administration of TCM (China) and elected a Fellow of the Royal Society of Chemistry (FRSC, UK). Currently, Prof. Wang also serves as the Director of the Research Services & Knowledge Transfer Office, the counterpart of a research support office and an IP management department in many other institutions. He joined University of Macau in October 2012, starting his independent research as an Assistant Professor and being promoted to Associate Professor in August 2018 and full Professor in August 2022, respectively. Before that, he received his BSc and MSc degrees in Biochemistry from Nanjing University and PhD in Biomedical Engineering from Nanyang Technological University and undertook his postdoctoral training at the University of Cambridge.

Personal website: <a href="https://sklqrcm.um.edu.mo/chun-ming-wang/">https://sklqrcm.um.edu.mo/chun-ming-wang/</a>





**Prof. Ke WEI** Professor of Tongji University

Prof. Ke WEI, Professor at College of Life Sciences and State Key Laboratory of Cardiology and Medical Innovation Center, Shanghai East Hospital, Tongji University, completed his undergraduate studies in the Department of Biological Sciences and Technology at Tsinghua University and obtained his Ph.D. in Physiology from the University of California, Los Angeles. His main research interest is on cardiac development, heart diseases, and cardiac regeneration. He has published more than 30 research papers in journals including *Nature, Circulation, PNAS, Nature Communications*, and *Cardiovascular Research*, and *Protein & Cell*, elucidating the mechanisms of cardiac development and various heart diseases. He discovered multiple signaling pathways that can promote the regeneration of the heart after injury, providing theoretical foundations and feasible solutions for the development of innovative cardiac regenerative drugs and has obtained several related patents. He has been funded by multiple grants from National Natural Science Foundation as well as National Key Research and Development Program of China.

Personal website: https://life.tongji.edu.cn/03/19/c12618a131865/page.htm



## Prof. Yaozu XIANG

Director of the Department of Biomedicine and Technology at the School of Life Science and Technology, Tongji University Professor of Tongji University



Prof. Yaozu XIANG is tenured Professor at Tongji University and Director of the Department of Biomedicine and Technology at the School of Life Science and Technology. He is a recipient of the National Excellent Youth Scholar and National Young Qihuang Scholar awards. His work focuses on the pathogenesis of cardiovascular diseases and interventions in both traditional Chinese and Western medicine. He has made significant strides in these areas, and established the biological basis of blood stasis syndrome. And he has made significant progress in exploring the mechanisms of immune thrombosis formation and uncovering cardiovascular drug targets. These contributions have introduced novel intervention strategies for the integrated prevention and treatment of coronary heart disease. As corresponding/first author, he has published over 20 SCI papers in esteemed academic journals such as *Blood, Journal of Clinical Investigation, PNAS, Protein Cell,* and *Cell Reports.* Additionally, he has applied for or been granted 10 patents and has served as the lead editor of 2 monographs. He has received prestigious awards including the ISTH Young Investigators Award, NSTH Science Prize, and Imperial Rector's Award.

Personal website: https://life.tongji.edu.cn/03/17/c12618a131863/page.htm





**Prof. Ruiyu XIE** Associate Professor of University of Macau

Prof. Ruiyu XIE received her BSc in Microbiology from Sun Yat-sen University and her PhD in pharmacology and toxicology from the University of Arizona. Following her postdoc training in Prof. Maike SANDER's laboratory at the University of California San Diego, Prof. Xie joined the Faculty of Health Sciences, the University of Macau in 2014. Prof. Xie's research focuses on understanding the molecular and cellular mechanisms that control lineage specification in the embryonic and adult pancreas. Specifically, her research group is combining genomic and human embryonic stem cell-based approaches to understand how epigenetic regulators control cell fate decisions during pancreas development and identify crucial conditions that promote the differentiation of hPSCs into functional endocrine cells for cell replacement therapies for diabetes. Additional ongoing research in Prof. Xie's laboratory includes using mouse genetic and organoid technologies to study the molecular basis of the formation of pancreatic ductal adenocarcinoma and explore novel preventive strategies for pancreatic cancer. Prof. Xie's research work has been published in leading journals including *Nature Communications, Cell Stem Cell, Nucleic Acids Research*, etc.

Personal website: https://fhs.um.edu.mo/en/staff/ruiyu-xie/



**Prof. Ren-He XU** Associate Dean (Research) of Faculty of Health Sciences, University of Macau Distinguished Professor of University of Macau



Prof. Ren-He XU is Distinguished Professor and Associate Dean (Research) of the Faculty of Health Sciences, University of Macau and the President of Macau Society for Stem Cell Research. He has studied stem cell biology and applications for decades, published near 100 papers with around 10,000 citations, and obtained 10 patents from USA and China. The mesenchymal stem cells differentiated from human embryonic stem cells via trophoblasts (T-MSCs) his team invented were approved as an investigational new drug by the USA Food and Drug Administration for a clinical trial on multiple sclerosis. Currently, Prof. Xu leads a Macau Key R&D project and a China National Key R&D project to study the clinical application of T-MSCs. His laboratory recently explored the developmental potency of T-MSCs via chimerism with the mouse blastocyst and the application of T-MSCs to reveal how stromal cells help circulating tumour cells escape NK cell surveillance.

Personal website: https://fhs.um.edu.mo/en/staff/ren-he-xu/





**Prof. Qi ZHAO** Associate Professor of University of Macau

Prof. Qi ZHAO is an Associate Professor at the Faculty of Health Sciences, University of Macau. He earned his bachelor's degree from Jilin University, and completed his PhD at the Chinese University of Hong Kong. He has held a postdoctoral fellow at the National Cancer Institute and as a Research Associate at the Memorial Sloan-Kettering Cancer Center in USA. He has authored and co-authored over 100 papers in peer-reviewed journals such as Nature Communications, Journal of Hematology & Oncology, Leukemia, and Clinical Cancer Research. His accomplishments also include 20 granted patents and prestigious awards. He has been honored with the US NIH Federal Technology Transfer Award. He has been actively engaged in various research projects, including the National Key Research and Development Program, Macao Science and Technology Development Fund, NSFC-FDCT Joint Fund, Zhong Nanshan Medical Foundation, Dr. Stanley Ho Medical Development Foundation, and Novo Nordisk Research Fund. His group employed phage display antibody library screening techniques to identify several specific monoclonal antibodies. Utilizing yeast display combined with computer-assisted design, these antibodies were recombinantly engineered into high-affinity antibodies, mediating tumour cell killing through the mechanism of antibody-dependent cell-mediated cytotoxicity. Additionally, these antibodies were engineered into bispecific antibodies targeting tumour cells and human NK cell markers, capable of engaging NK cells to kill tumours. Furthermore, chimeric antigen receptor (CAR)-modified T cells were constructed. Simultaneously, based on immune cell formulation, drug delivery systems for targeted delivery and controlled release of therapeutics were developed in various in vitro and in vivo models. These data will support further development of therapeutic agents of this class in preclinical and clinical research.

#### Personal website:

https://fhs.um.edu.mo/en/staff/qizhao/



#### Prof. Yong ZHANG Chair of Department of Bioinformatics, Tongji University Professor of Tongji University



Prof. Yong ZHANG, Professor, Chair of Bioinformatics Department. Prof. Zhang focuses on developing bioinformatics algorithms and artificial intelligence models to study the heterogeneous and dynamic properties of chromatin regulation during cell fate determination. As the corresponding author, he has published over 40 papers in mainstream journals such as *Nature, Nature Cell Biology, Genome Research* and *Genome Biology*. He has received the National Science Fund for Distinguished Young Scholar, the National Natural Science Fund for Excellent Young Scholar, the Young Scholars of the Yangtze River, the National Natural Science Award, the Shanghai Natural Science Award, the Natural Science Award of the Ministry of Education, etc.

Personal website: https://zhanglab.tongji.edu.cn/



### **Contact Information**

#### Address:

Room 4045, Faculty of Health Sciences (E12) Building, University of Macau, Avenida da Universidade, Taipa, Macao, China

#### Contacts:

Mr. Andrew LIU Email: <u>andrewliu@um.edu.mo</u> Tel: 853-8822 4201

Ms. Bibiana TANG Email: <u>bibianatang@um.edu.mo</u> Tel: 853-8822 4405

Ms. Dion HUANG Email: <u>dionhuang@um.edu.mo</u> Tel: 853-8822 4406

Ms. Chloe HO Email: <u>chloeho@um.edu.mo</u> Tel: 853-8822 9199

