





中藥機制與質量全國重點實驗室(澳門大學) Laboratório de Referência do Estado para Mecanismo e Qualidade da Medicina Chinesa (Universidade de Macau) State Key Laboratory of Mechanism and Quality of Chinese Medicine (University of Macau)

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## ICMS NEWSLETTER



The 3<sup>rd</sup> International Symposium on Chinese Medicine and Natural Products
The 3<sup>rd</sup> International Symposium on Pharmaceutical Sciences

Son 18-20 2025 University of Macau, Macao SAR

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## **News & Updates**

## UM, Kiang Wu Hospital sign MOU to advance integration of 'big health' research and clinical applications



The University of Macau (UM) and Kiang Wu Hospital signed a memorandum of understanding (MOU) on the 23 July, establishing a long-term cooperation framework covering areas such as 'big health' product development, clinical trials of drugs, the optimisation of Chinese medicine formulae, academic exchange, and shared resource development.

Chen Xin, director of the Institute of Chinese Medical Sciences at UM, and Ung Pui Kun, director of Kiang Wu Hospital, signed the MOU in the presence of Song Yonghua, rector of UM, Xu Jian, vice rector of UM, Lau Veng Seng, president of Board of Directors of Kiang Wu Charitable Association, and Sio Chi Wai, vice president of Board of Directors of Kiang Wu Charitable Association. Under the





MOU, the two parties will deepen cooperation in teaching, research, clinical practice, and technological innovation to facilitate the integration of clinical practice and medical research and the application of research outcomes, thereby enhancing Macao's overall competitiveness in health technology and the modernisation of Chinese medicine.

The Kiang Wu Hospital delegation also visited UM's Institute of Chinese Medical Sciences and the State Key Laboratory of Mechanism and Quality of Chinese Medicine, where they learned about the university's research on the quality of Chinese medicine and the screening of active ingredients of Chinese medicine. The two parties held in-depth discussions on the clinical research and application of Chinese medicine.

## UM-PKU Joint Symposium on Frontiers of Pharmaceutical Sciences held at UM



The Institute of Chinese Medical Sciences (ICMS) of the University of Macau (UM) hosted the 'UM-PKU Joint Symposium on Frontiers of Pharmaceutical Sciences' on 11 July. The symposium brought together faculty and student representatives from both UM and Peking University (PKU) to discuss the latest advancements in pharmaceutical sciences.

The event commenced with a welcome address by Prof. Wan Jianbo, Deputy Director of ICMS. Subsequently, Prof. Lu Jinjian, Assistant Director of ICMS, introduced the institute's teaching and research system and curriculum features. Prof. Tian Songhai, Professor of the School of Pharmaceutical Sciences at PKU, shared the achievements in discipline construction at PKU. Following these introductions, featured presentations were delivered by Prof. Tian Songhai and Prof. Guan Jingyang from PKU, as well as Prof. Wang Ruibing and Prof. Wan Jianbo from UM. Their presentations covered cutting-edge topics such as bacterial toxins, cell therapy, and innovative research in Chinese medicine, providing a cross-disciplinary platform for academic exchange. The delegation also visited the State Key Laboratory of Mechanism and Quality of Chinese Medicine (SKL-MQCM) at UM to learn about its latest progress in fundamental research and clinical translation of Chinese medicine.

This activity facilitated academic exchange between faculty and students from both universities in the field of pharmaceutical sciences and laid a foundation for future scientific collaboration and talent exchange.

### ICMS New Student Orientation 2025/26

On 15 August, the Institute of Chinese Medical Sciences (ICMS) successfully held "New Student Briefing" at University of Macau. The event mainly introduced important precautions for new students studying at ICMS and warmly welcomed their arrival. The event attracted nearly 200 new students and was hosted by Prof. Lu Jinjian, Assistant Director of ICMS (Teaching/Research).

At the beginning of the event, Prof. Chen Xin, Director of ICMS delivered a speech, expressing his welcome to the new students and briefly introducing the history of ICMS. Subsequently, ICMS administration and laboratory representatives introduced course selection and laboratory safety to the students. PhD's program coordinator, Prof. Leung Chung Hang introduced the doctoral program while master's program coordinators, Prof. Bian Ying and Prof. Ung Oi Lam, provided an overview of the master's programs. Finally, the ICMS Postgraduate Association (ICMSPA) introduced the latest

situation of the association to the freshmen and welcomed them to join ICMSPA to jointly create the future of the research field.

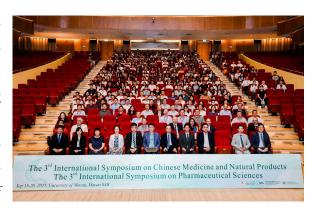
This activity has further deepened the understanding of ICMS among new students and provided them with preliminary solutions for any problems they



may encounter in the future. It successfully equipped our new postgraduate students with the essential knowledge, resources, and confidence to begin their academic journey with clarity and enthusiasm.

## UM hosts 3rd International Symposium on Chinese Medicine and Natural Products and the 3rd International Symposium on Pharmaceutical Sciences

The 3rd International Symposium on Chinese Medicine and Natural Products (ISCMNP) and the 3rd International Symposium on Pharmaceutical Sciences (ISPS) commenced with an opening ceremony at the University of Macau (UM) on 19 September. The symposium, jointly organised by the Institute of Chinese Medical Sciences (ICMS) and the State Key Laboratory of Mechanism and Quality of



Chinese Medicine (SKL-MQCM) at UM, has brought together over 300 experts, scholars, researchers, and students from the Chinese mainland, Hong Kong, Macao, as well as the US, Canada, Australia, Italy, Portugal, and Indonesia, to discuss the latest advancements and development trends in Chinese medicine, natural products, and pharmaceutical sciences.

In his opening remarks, Ge Wei, vice rector of UM, noted that Macao, with its profound heritage in Chinese medicine, offers a unique and advantageous environment for developing the Chinese medicine industry. UM, as a university rooted in Macao, is committed to contributing to the development of the Greater Bay Area, integrating into national development, and increasing its internationalisation. The university is actively integrating into the national strategy for advancing Chinese medicine while continuously expanding its international cooperation and exchange. Ge also expressed his hope that the

symposium would foster innovation and deeper cooperation in the field.

Chen Xin, director of ICMS and director of SKL-MQCM, remarked that the international symposium would establish a high-level dialogue platform for experts and scholars from around the world, facilitating knowledge sharing, sparking innovative ideas, and laying a solid foundation for future academic collaboration and industrial applications.



The opening ceremony was also attended by Ip Kuai Lam, member of the Administrative Committee of the Science and Technology Development Fund of the Macao SAR; Carlos Roberto Xavier, acting deputy director of the Education and Youth Development Bureau; Xie Ying, deputy secretary-general of the Permanent Secretariat of Forum for Economic and Trade Co-operation between China and Portuguese-speaking Countries (Macao); Ung Pui Kun,



The symposium features 29 presentations covering topics such as cutting-edge research on the mechanism and quality of Chinese medicine, molecular targets in immunotherapy, clinical research and regulation of Chinese medicine, advanced technologies for drug discovery, and innovative drug delivery systems. Through oral presentations and poster presentations, the symposium aims to facilitate in-depth cross-disciplinary and cross-sectoral exchange.



director of Kiang Wu Hospital; Mo Hui, director of the World Health Organization Collaborating Centre for Traditional Medicine in Macao and representative of the Health Bureau; Iong Nin Fai, head of the Technology Department at the Economic and Technological Development Bureau; Lam Fu Chong, chief of the Division of Traditional Chinese Medicine at the Pharmaceutical Administration Bureau; Chak Wai Shan, manager of the Convention and Exhibition Industry Development Division at the Commerce and Investment Promotion Institute; and Shen Hanming and Xu Renhe, associate deans of the Faculty of Health Sciences at UM.

## The monograph edited by UM Professor Defang Ouyang awarded funding from the 2024 National Science and Technology Academic Publications Program

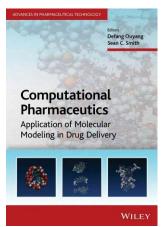


Following expert evaluation and approval by the program committee, the monograph "Computational Pharmaceutics: Artificial Intelligence and Modeling in Pharma 4.0", edited by Dr. Defang Ouyang, Associate Professor at the Institute of Chinese Medical Sciences/ State Key Laboratory of Mechanism and Quality of Chinese Medicine and the Department of Public Health and Medicinal Administration of the Faculty of Health Sciences, University of Macau, was selected for funding support from the 2024 National Science and Technology Academic Publications Funding Program.

As early as 2011, Dr. Ouyang pioneered the application of AI, big data, and multiscale simulation techniques in pharmaceutical formulation studies, establishing the research direction of "Computational Pharmaceutics". In 2015, he edited and published the field's first English monograph "Computational Pharmaceutics", which was published by the world-renowned academic publisher John Wiley & Sons, Inc. and gained broad international attention and acclaim. In June 2024, the second edition, "Exploring Computational Pharmaceutics - AI and Modeling in Pharma 4.0", was also published by Wiley.



In May 2025, the Chinese edition "Computational Pharmaceutics: Artificial Intelligence and Modeling in Pharma 4.0" was published by



Chemical Industry Press, which systematically integrates the latest advances in AI, big data, multiscale modeling, and quantitative pharmacology applied to pharmaceutical R&D. The book covers the entire R&D pipeline, from preformulation studies and process development to clinical trials, and explores the intelligent development of novel drug delivery systems such as liposomes, dendrimers, and inorganic nanoparticles. Authored collaboratively by experts from academia, industry, and regulatory agencies, the book presents a comprehensive overview of the cutting-edge progress and future directions of computational pharmaceutics in the Pharma 4.0 era.

The funding award from the National Science and Technology Academic Publications Program underscores the monograph's high academic value and social significance. Current book will not only serve as an important reference for pharmaceutical scientists, R&D professionals, university faculty

and students, and regulatory authorities, but also help drive the intelligent and digital transformation of China's pharmaceutical industry, contributing Chinese wisdom to global pharmaceutical innovation.

# State Key Laboratory of Mechanism and Quality of Chinese Medicine at UM presented with plaque



A plaque presentation ceremony for State Key Laboratories (SKLs) in Macao was held at the headquarters of the Macao SAR government on 26 August. The presentation of plaques to the three SKLs at the University of Macau (UM) demonstrates the university's growing integration into the country's State Key Laboratory system through its strengths in science and technology.

Yin Hejun, minister of science and technology, presented the plaques to the SKLs in Macao in the presence of Sam Hou Fai, chief executive of the Macao SAR, and Zheng Xincong, director of the Liaison Office of the Central People's Government in the Macao SAR. Song Yonghua, rector of UM and director of the State Key Laboratory of Internet of Things for Smart City (SKL-IOTSC); Mak Pui In, director of the State Key Laboratory of Analog and Mixed-Signal VLSI (SKL-AMSV); and Chen Xin, director of the State Key Laboratory of Mechanism and Quality of Chinese Medicine (SKL-MQCM), received the plaques on behalf of their respective SKLs.

In his speech, Sam said that with the support of the central government, the Ministry of Science and Technology has approved the establishment of four SKLs in Macao. Based in Macao and committed to serving the country, the four SKLs have made remarkable achievements in areas such as scientific research and development, the commercialisation of research results, talent development, and international cooperation. Yin emphasised that following their restructuring, the SKLs in Macao should seize the opportunities of the times, strengthen their sense of mission, foster a positive atmosphere, step up efforts to attract and retain talent, facilitate access to resources, and promote integrated development.

On the same day, the Science and Technology Development Fund (FDCT) of the Macao SAR hosted a meeting, where Yin met with the directors of the SKLs to discuss how Macao and Hong Kong can better integrate into the national innovation system through their strengths in science and technology.



They also explored potential opportunities for cooperation in technological innovation between Macao, Hong Kong, and the Chinese mainland. Song said that through the integration between Macao and Hengqin and by leveraging the complementary strengths of the two places, UM will attract more international science and innovation resources to Macao and the Guangdong-Macao In-Depth Cooperation

Zone in Henqin, and enhance research innovation and industry-academia collaboration. This will support Macao and Hong Kong in integrating into the national innovation system through their strengths in science and technology in a more profound and extensive manner, and help build the country into a global leader in science and technology.

# UM Macao Centre for Testing of Chinese Medicine receives CNAS accreditation for multiple international standards



The Macao Centre for Testing of Chinese Medicine (MCTCM), University of Macau (UM) successfully completed its third accreditation and scope expansion audit by the China National Accreditation Service for Conformity Assessment (CNAS) on 15 September. An expert panel from CNAS conducted an on-site

assessment of MCTCM to review its legal status, quality system, technical capabilities, equipment, and research personnel. Following a rigorous evaluation, the experts confirmed that the centre possesses the requisite testing capabilities. The CNAS accreditation ensures that test reports issued by MCTCM are recognised internationally. This provides robust technical support for the export of Chinese medicine products, reduces technical barriers to trade, and promotes the circulation and recognition of Chinese medicine in international markets. The centre is currently accredited for 164 testing parameters.

## **Academic Visits**

## Productive Science Exchange and ICMS/SKL-MQCM Visit for Hong Kong and Macau secondary students



"The 2025 Hong Kong-Macau Secondary School Students Technology Competition Exchange and Visit to the University of Macau's Institute of Chinese Medical Sciences / the State Key Laboratory of Mechanism Quality Chinese (SKL-MOCM)" Medicine was successfully held on 1 July. Co-organized by the Institute of Chinese Medical Sciences and the Hong Kong Student Science Project Competition (HKSSPC), the event aimed to provide a platform for scientific exchange and learning among secondary students from Hong

Kong and Macau.

During the program, students showcased their award-winning projects and toured the SKL-MQCM at the University of Macau.

The event began with an introduction to the Institute and the State Key Laboratory, highlighting their research focus and facilities. Guided tours allowed students to explore the laboratory environment and gain insights into cutting-edge scientific research being conducted.

Following the tour, students and teachers engaged in a discussion and project exchange session. Participating teams included four from Hong Kong, winners of the HKSSPC junior and senior groups, and two from Macau, who had received first prizes in the National Youth Space Innovation Competition.

Schools presented at the event included Heep Yunn School, Carmel Divine Grace Foundation Secondary School, King's College, and Carmel Pak U Secondary School from Hong Kong, as well as Premier School Affiliated to Hou Kong Middle School from Macau, along with teachers and students from other Hong Kong secondary schools.

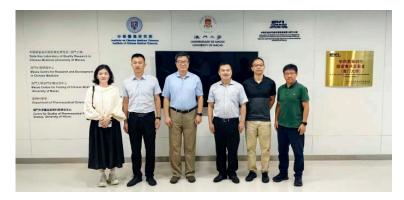
## Delegation from Sun Yat-sen University visits ICMS



On 11 July, a delegation led by Prof. Gao Song, President of Sun Yat-sen University, visited the Institute of Chinese Medical Sciences (ICMS) and the State Key Laboratory of Mechanism and Quality of Chinese Medicine (SKL-MQCM) at the University of Macau. The delegation members were warmly received by Prof. Chen Xin, Director of ICMS and Director of SKL-MQCM, along with Prof. Wang Chunming, Director of the Global Affairs Office, and Dr. Cheang Wai San, Assistant Director of ICMS.

Prof. Chen introduced to the guests the overall situation and the latest research achievements of ICMS and the SLK-MQCM. The delegation also visited the laboratories, pharmaceutical research platforms and core facilities in ICMS, and highly appraised the research achievements and development of ICMS. The two parties had in-depth discussions and expressed their mutual interest to promote cooperation.

## Delegation from Northwestern Polytechnical University visits ICMS



Director of ICMS.

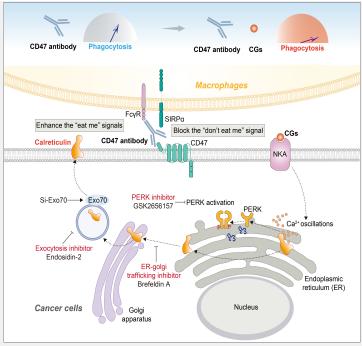
On 21 July, Duan Libin, Secretary of the Party Committee of the School of Life Sciences and Medicine of Northwestern Polytechnical University, led a delegation to visit the Institute of Chinese Medical Sciences (ICMS) and the State Key Laboratory of Mechanism and Quality of Chinese Medicine (SKL-MQCM) at the University of Macau. The delegation members were warmly received by Prof. Chen Xin, Director of ICMS and Director of SKL-MQCM, along with Prof. Lu Jiahong, Deputy

Prof. Chen provided an overview of the development and achievements in innovative research on traditional Chinese medicine, international academic collaboration, and the translational research of ICMS and SKL-MQCM. Prof. Chen also guided the delegation on a tour of the laboratory. Both sides engaged in extensive discussions on potential collaborations in life sciences, pharmaceutical research, ecological environment, and other fields, expressing hopes to further strengthen academic exchanges between the two institutions and promote interdisciplinary collaborative innovation.

## Research Highlights

## Repurposing cardiac glycosides to potentiate CD47 blockade through calreticulin-mediated phagocytic effects for lung cancer treatment

Exploiting the phagocytic function of macrophages by blocking the "don' teat me" signal, CD47, has shown significant therapeutic potential for cancer. However, novel CD47-targeted combination strategies warrant further investigation. The teams led by Prof. Lu Jinjian, found that two cardiac glycosides (CGs), ouabain and digoxin, increased the anti-cancer effect of CD47 antibody, through an analysis of data obtained from a screening model focused on the macrophage-mediated killing effect. CGs combined CD47 antibody reduced the tumor volume in different lung cancer models and increased the macrophage phagocytosis rate nearly 5-folds. Mechanistically, in addition to Fc-Fc  $\gamma$  R interaction, CGs enhanced the expression of a pro-phagocytotic signal, calreticulin (CRT). Moreover, PERK inhibitor, ER-Golgi protein trafficking inhibitor, and siRNA-mediated knockdown of exocytosis protein exo70, abrogated both CGs-induced CRT upregulation and the ensuing enhancement of phagocytosis. These findings indicate that CGs drive CRT translocation via ER-golgi-exo70-mediated exocytosis. Overall, this study offers compelling evidence that supports the clinical translation of an innovative combination regimen for treatment of lung cancer. The research have been published in the internationally renowned journal *Advanced Science*.

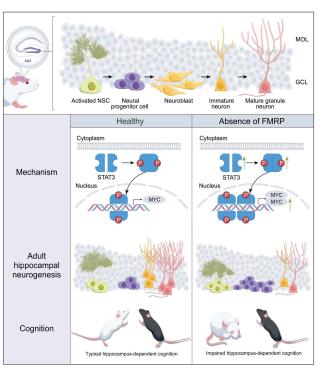


Schematic showing that CGs strengthen the efficacy of CD47 antibody for lung cancer treatment by boosting macrophage phagocytosis. This novel combination blocks "don't eat me" signal, and increases dual "eat-me" signals, Fc-Fc  $\gamma$  R and cell surface expression of CRT.

Advanced Science, 2025 Sep 23:e08245

## FMRP regulation of STAT3-MYC signaling is critical for adult hippocampal neurogenesis and cognitive flexibility

Fragile X syndrome (FXS), the most common form of inherited intellectual disability, results from a loss of fragile X mental retardation protein (FMRP), an RNA-binding protein whose deficiency impacts many targeted mRNA and brain functions. However, how these FMRP targets contribute to the pathogenesis of FXS is not fully understood, and effective treatment is lacking. The research team led by Li Yue, an associate professor from the institute of Chinese Medical Sciences (ICMS) and State Key Laboratory of Mechanism and Quality of Chinese Medicine at the University of Macau, has identified signal transducer and activator of transcription 3 (STAT3) as a target of FMRP in adult hippocampal neural stem cells (NSCs). FMRP regulates Stat3 mRNA stability and protein translation, and loss of FMRP results in elevated Stat3 mRNA and protein, leading to aberrant neurogenesis and impaired dendritic maturation in adult NSCs and developing neurons. Activation of Stat3 in adult mouse hippocampal NSCs impairs cognitive flexibility. Then, STAT3 phosphorylation specifically binds to MYC, which is essential for adult hippocampal neurogenesis. Both genetic reduction of STAT3 and pharmacological treatment with artesunate, the first-line drug for treating malaria worldwide, rescue neurogenic and cognitive deficits in FMRP-deficient mice. The work reveals a potential regulatory role for FMRP and STAT3-MYC signaling pathway in adult neurogenesis and cognitive flexibility, and provides a potential novel therapeutic strategy for treating adult FXS patients. The discovery has received a Chinese patent (No. ZL202210861160.X) and been published in a top international journal *Cell Death & Differentiation*.

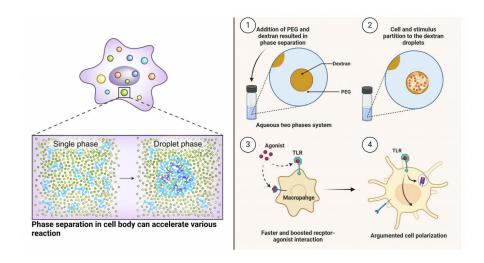


Schematic models for FMRP regulation of the STAT3 and MYC pathway, which impacts adult neurogenesis and cognition

## An engineered phase-separation culture system to accelerate immunocyte activation by enhancing intracellular liquid-liquid phase separation

A major obstacle for cell therapy is the lengthy time required for cell programming. To address this challenge, Professor Chunming Wang and his team at the University of Macau have developed an engineered culture system that leverages the principles of liquid-liquid phase separation (LLPS). The system uses an aqueous two-phase system (ATPS) of biocompatible polyethylene glycol (PEG) and dextran (DEX) to create a microenvironment that concentrates stimulants and cells together.

Through this strategy, the activation time for macrophages and T cells is reduced by over 80%. Furthermore, the expression of targeted genes is increased by over 10-fold compared to conventional culture methods. The study revealed that this engineered extracellular LLPS boosts crucial intracellular phase separation events, which explains the accelerated cell activation. This innovative approach offers a new strategy to improve cell manufacturing efficiency for various therapies. The research has been published in the internationally renowned journal *Cell Biomaterials* 



A schematic diagram of the engineered phase-separation system. The ATPS concentrates stimulants (red dots) and cells in the DEX phase, creating a high local concentration to enhance intracellular LLPS and accelerate activation

## **ICMS** Publications

#### July 2025

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