

ICMS NEWSLETTER



News

- Chinese Medicine Culture Creative Design Competition
- Conference on Chinese medicine and immunology
- Visit of ICMS at TIB
- CPD course for health professionals
- Regulatory Science for Pharmaceutical Innovation and Internationalization Conference
- Talk on how Panax plants resist pathogen invasion

Visits

- Peking University Health Science Center
- Party secretary of Guangxi
- Sichuan Vice Governor
- Liaoning University of Traditional Chinese Medicine
- Macao Trade and Investment Promotion Institute
- East China Normal University
- Wenzhou Medical University

Researches

- UM research team collaborated to map global landscape for iPSC from patents and clinical trials
- The development of a novel oral formulation for ulcerative colitis
- A macrophages-targeted delivery system using efferocytosis biomimetic liposomes to alleviate inflammation

News & Updates



“Celebration of the 25th Anniversary of Macao’s Return to the Motherland” Chinese Medicine Culture Creative Design Competition of UM concludes successfully

The “Celebration of the 25th Anniversary of Macao’s Return to the Motherland” Chinese Medicine Culture Creative Design Competition of UM was jointly organized by the Institute of Chinese Medical Sciences (ICMS), State Key Laboratory of Quality Research in Chinese Medicine (SKL-QRCM), Communications Office (CO), Student Affairs Office (SAO), Centre for Innovation and Entrepreneurship (CIE), and UMTEC Limited of the University of Macau (UM), and co-organized by the ICMS Postgraduate Association (ICMSPA).

The final competition was held on June 26, 2024.

This competition aimed to promote Chinese medicine culture, cultivate love for the country and Macau, convey the joy and blessings of Macau's return, and showcase the profoundness of Chinese culture to the international community through creative cultural works. UM students enthusiastically joined this competition. The participating

works encompassed a diverse range of items, including handicrafts, functional foods, daily necessities, office supplies, and cultural brand derivatives. In the end, 12 outstanding works were selected for the finals.

The participants showed their works to the judges through roadshows and physical displays. Through a combination of over 12,000 online votes and on-site



judging by the panel, one first prize, two second prizes, three third prizes, and six outstanding awards were selected.

The event was sponsored by the Dr. Stanley Ho Medical Development Foundation. The judging panel for this competition included Mr. Michael Ching, the representative from the Dr. Stanley Ho Medical Development Foundation; Prof. Xin Chen, the director of ICMS; Mr. Chap Chong Pang, the Dean of Students; Dr. Wai Kam Cheong, the Director of CO, and so on.



UM, Tsinghua University jointly hold conference on Chinese medicine and immunology

The Institute of Chinese Medical Sciences (ICMS) of the University of Macau (UM) and the School of Medicine of Tsinghua University jointly held a conference on Chinese medicine and immunology at UM.



The conference brought together experts and scholars to discuss the advances in research in immunology and the role of traditional Chinese medicine in regulating the immune system.

During the conference, experts from UM and Tsinghua University presented their latest research in Chinese medicine and immunology. They included Chen Xin, director of ICMS; Lu Jiahong, deputy director of ICMS; Lu Jinjian, assistant director and PhD programme coordinator of ICMS; and Lin Xin, Shi Yan, and Zeng Wenwen, professors in the School of Medicine at Tsinghua University.



In addition, representatives from ICMS and Tsinghua University's School of Medicine held discussions and introduced their own faculty teams, teaching standards, research platforms, and research directions. They also explored ideas and proposals for cooperation in postgraduate education and research, laying the foundation for further collaboration between the two universities in the fields of Chinese medicine and immunology.





ICMS visits the Tianjin Institute of Industrial Biotechnology, Chinese Academy of Sciences

On June 11, 2024, Distinguished Professor Xin Chen, the Director of the Institute of Chinese Medical Sciences (ICMS) and the Director of the State Key Laboratory of Quality Research in Chinese Medicine (SKL-QRCM) at the University of Macau (UM), along with Associate Professor Jiahong Lu, the Deputy Director, and Professor Jianbo Wan, the Assistant Director, visited the Tianjin Institute of Industrial Biotechnology (TIB), Chinese Academy of Sciences (CAS), for an exchange and discussion. The meeting was chaired by Chaoguang Tian, Deputy Director of TIB.

During the meeting, Chaoguang Tian introduced the overall situation and recent progress in technological innovation at TIB, while Xin Chen presented an overview of UM, as well as the progress of ICMS and SKL-QRCM.

The two sides engaged in in-depth discussions on accelerating the innovative development of synthetic biology in traditional Chinese medicine, including advancing the construction of joint laboratories, promoting talent cultivation, academic exchanges, and technology transfer.

In his concluding remarks, Hua Xiang, Legal representative and Deputy Director of TIB pointed out that traditional Chinese medicine is a strategic resource for the country. TIB has significant advantages in the microbial recombination synthesis of key components in traditional Chinese medicine, while ICMS has a profound foundation in the evaluation of traditional Chinese medicine's efficacy and quality research.

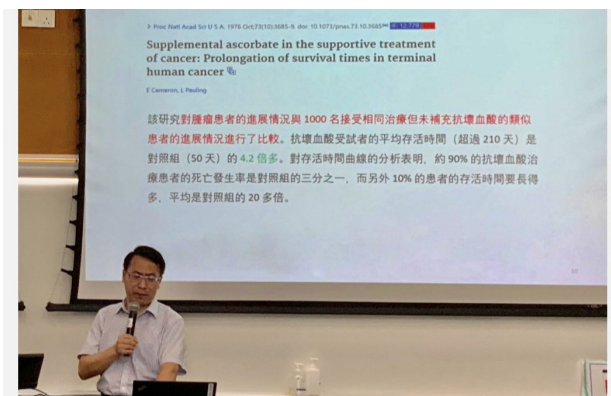
The ongoing establishment of a joint laboratory for synthetic biology in traditional Chinese medicine reflects the concept of complementing disciplinary advantages and holds great significance for the inheritance, innovation, and high-quality development of traditional Chinese medicine resources. Chen Xin expressed that UM



attaches great importance to cooperation with TIB and looks forward to deepening collaboration, leveraging respective strengths, and jointly promoting innovation, talent cultivation, and technology transfer in the field of synthetic biology in traditional Chinese medicine.

CCE and ICMS offer CPD course for health professionals

CCE and ICMS jointly organized a course for “Continuing Professional Development (CPD) Training Activity” on 11 May. The course, approved by Conselho dos Profissionais de Saúde, is named as “Developing an Evidence Base of Medical Treatment: Clinical Studies and Real-world Studies”. The students are professionals from the field of Macao health, including doctors, dentists, pharmacists, nurses and medical laboratory technologists. The 3-hour course was lectured by professors from ICMS, Prof. Xiuping Chen and Hao Hu both face-to-face and online. The course had been successfully completed with great recognition and positive feedbacks.



To promote the development of the pharmaceutical industry in Macao and the Greater Bay Area (GBA), the Centre for Pharmaceutical Regulatory Sciences of UM and the Macao Society for Medicinal Administration jointly held the Regulatory Science for Pharmaceutical Innovation and Internationalization Conference.

UM holds Regulatory Science for Pharmaceutical Innovation and Internationalization Conference

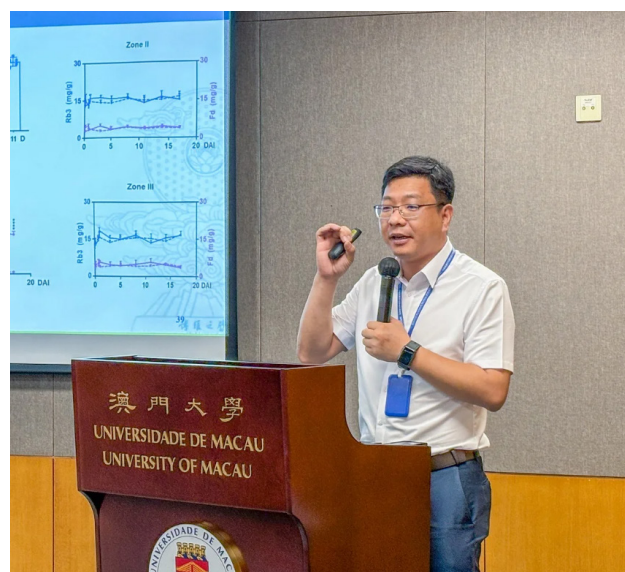


The event brought experts, scholars, and industry professionals together from Macao, mainland China and abroad, as well as UM faculty and students, to discuss how to accelerate the internationalisation of the pharmaceutical industry through innovation in regulatory science.

UM scholar gives talk on how Panax plants resist pathogen invasion

UM held a talk titled 'Natural Defense Shield: Deciphering the Two-component Chemical Defense System of Panax Plants' as the 19th UM Scholar Research Forum on April 23, 2024. Prof. Jianbo Wan, professor and programme director at ICMS and SKL-QRCM, was the speaker. During the talk, Prof Wan presented the efficacy, geographical distribution and chemical composition of Chinese medicine *Panax notoginseng*, and explained how he discovered the two-component chemical defence system in its leaves.

The talk was well attended by faculty members and students.



Academic Visits

A delegation from Peking University Health Science Center visits ICMS

On June 7, 2024, a delegation led by Prof. Jie Qiao, Academician of Chinese academy of engineering, Executive Vice Deputy Director of Peking University Health Science Center, and President of Peking University Third Hospital, visited ICMS and the State Key Laboratory of Quality Research



in Chinese Medicine (SKL-QRCM) at UM. Wei Li, deputy head of the Office of Hong Kong, Macao & Taiwan Affairs, National Health Commission (NHC), accompanied.

The delegation received a warm reception from Prof. Xin Chen, Director of ICMS and Director of SKL-QRCM, Prof. Ruibing Wang, Director of Global Affairs Office, Prof. Peng Li, Deputy Director, Prof. Xiuping Chen, Assistant Director, Prof. Ying Zheng, and Dr. Wai San Cheang.

Party secretary of Guangxi leads delegation to visit ICMS

A delegation led by Ning Liu, secretary of the CPC Guangxi Zhuang Autonomous Regional Committee and chairman of the Standing Committee of the regional People's Congress, visited UM on 24 May and was warmly received by Yonghua Song, rector of UM. The two parties look forward to deepening cooperation and exchanges in Chinese medicine education and industry-academia collaboration.



UM signed two cooperation agreements with relevant entities of Guangxi.

The delegation also visited the State Key Laboratory of Quality Research in Chinese Medicine and learned about UM's achievements in innovative Chinese medicine research in recent years.

Delegation from Sichuan visits ICMS

A delegation led by Xingping Yang, vice governor of Sichuan Province, visited UM and was warmly received by Rector Yonghua Song. The two parties had in-depth discussions on deepening exchanges in higher education between Macao and Sichuan and expanding cooperation in Chinese medicine.

Song hoped that UM and universities and research institutes in Sichuan will continue to complement each other's strengths and promote collaborative innovation to foster the development of industry-academia collaboration in Chinese medicine between the two places, as well as the training of high-calibre talents in related fields in both places.

The delegation also visited the University Gallery, the UM Library, the State Key Laboratory of Quality Research in Chinese Medicine, and the Macao Centre for Testing of Chinese Medicine, and spoke highly of UM's research development.



Delegation Led by Xu Dai, Vice President of Liaoning University of Traditional Chinese Medicine, visits ICMS

Under the support of UM, in March of this year, ICMS signed an agreement on the "Student Research Program" with Liaoning University of Traditional Chinese Medicine (LNUTCM). In order to implement the related initiatives and strengthen the collaborative ties between ICMS and LNUTCM, Prof. Xu Dai, Vice President of LNUTCM led a delegation with seven colleagues to visit the Zhuhai-Hengqin Guangdong-Macao In-depth Cooperation Zone on the morning of May 10, 2024. The delegation was warmly received by Prof. Xin Chen, the Director of ICMS, at the Zhuhai UM Science and Technology Research Institute.

Delegation from Macao Trade and Investment Promotion Institute (IPIM) visits ICMS

A delegation from the Macao Trade and Investment Promotion Institute (IPIM) visited ICMS and SKL-QRCM at UM on May 7, 2024. IPIM Executive Director Sam Lei led the delegation to meet with Prof. Xin Chen, Director of ICMS and Director of SKL-QRCM, Prof. Yuanjia Hu, Professor of ICMS, and Prof. Wai San Cheang, Assistant Professor of ICMS to have in-depth discussions on matters related to the one-stop service provided by IPIM and the industry-academia-research collaboration at UM.



Delegation from East China Normal University visits ICMS

A delegation led by Xuhong Qian, President of East China Normal University (ECNU), visited ICMS and the State Key Laboratory of Quality Research in Chinese Medicine (SKL-QRCM) at the University of Macau (UM) on May 7, 2024. The delegation members were warmly received by Prof. Xin Chen, Director of ICMS and Director of SKLQRCM, Prof. Maggie Pui-Man Hoi, Associate Professor of ICMS, and Prof. Jinjian Lu, Associate Professor of ICMS.



Delegation from Wenzhou Medical University visits ICMS

A delegation, which was led by Xiaokun Li, President of Wenzhou Medical University, visited ICMS and the State Key Laboratory of Quality Research in Chinese Medicine (SKL-QRCM) at UM on April 25, 2024. The delegation members were warmly welcomed by Prof. Xin Chen, Director of ICMS and Director of SKL-QRCM, Prof. Jianbo Wan, Full Professor of ICMS, and Prof. Wai San Cheang, Assistant Professor of ICMS.



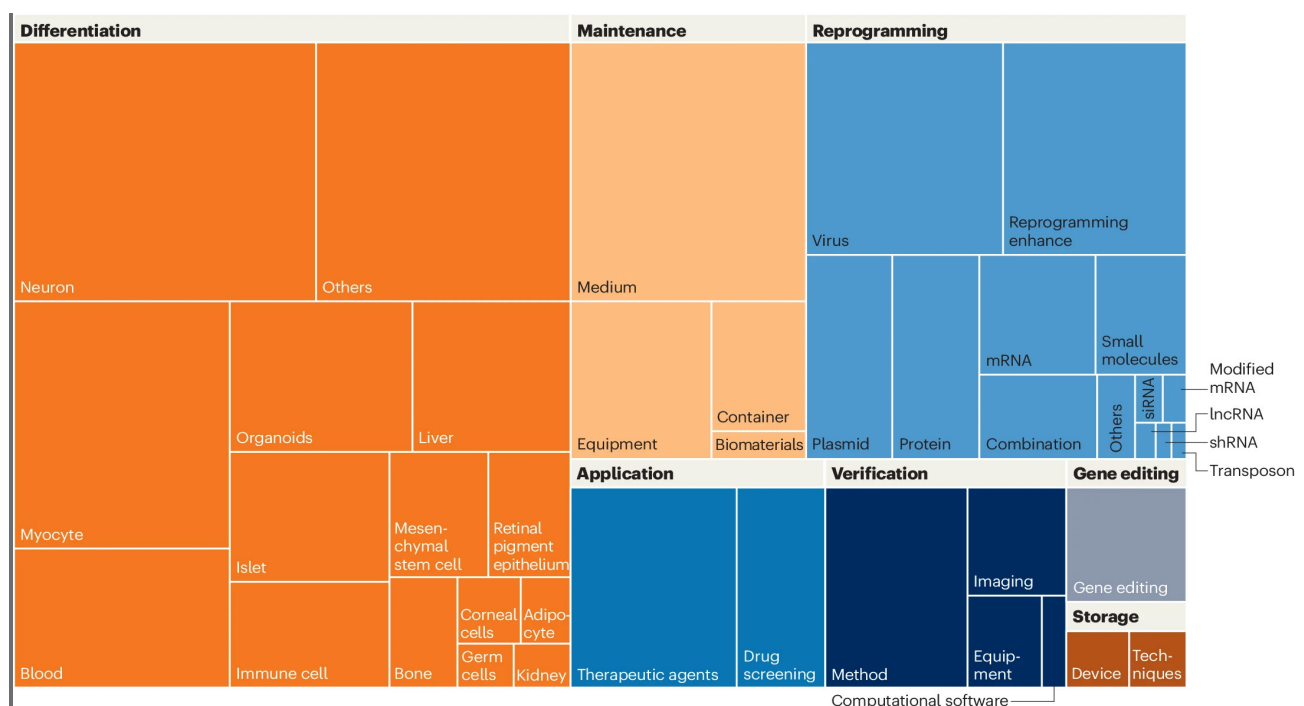
Research Highlights

● UM research team collaborated to map global landscape for iPSC from patents and clinical trials

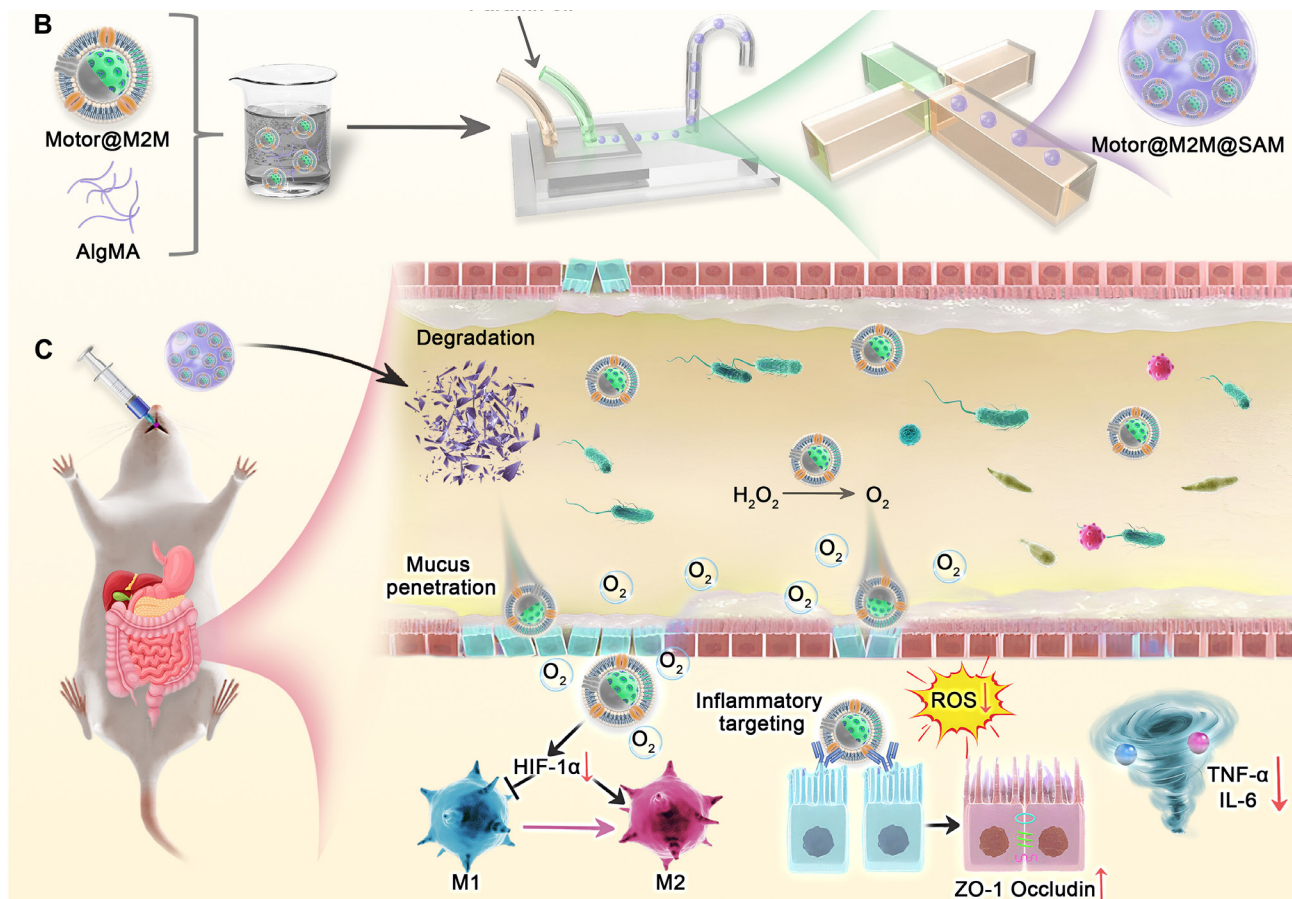
Eighteen years after the first report of induced pluripotent stem cells (iPSCs), Professor Yuanjia Hu of ICMS and Distinguished Professor Ren-He Xu of the Faculty of Health Sciences (FHS) at the UM conducted a collaborative study that for the first time systematically mapped global patents and clinical trials in this Nobel Prize-discovered technology area.

iPSCs are a type of pluripotent stem cells generated from somatic cells with several reprogramming factors. iPSCs share characteristics with embryonic stem cells, and both have great potential in study of disease modeling, regenerative medicine, drug screening and toxicological study. This work conducted full-field scanning, data linkage, and alignment analysis on 11,252 patents and 93 clinical trials related to iPSCs, providing a scientific decision-making reference for basic research and clinical applications of iPSCs.

The research, titled "Mapping global landscape for induced pluripotent stem cells from patents and clinical trials", was published in *Nature Biotechnology*, an internationally renowned academic journal.



Technological distribution of iPSC-related patents. iPSC patents were divided into seven categories: reprogramming, verification, maintenance, storage, differentiation, gene editing and application.



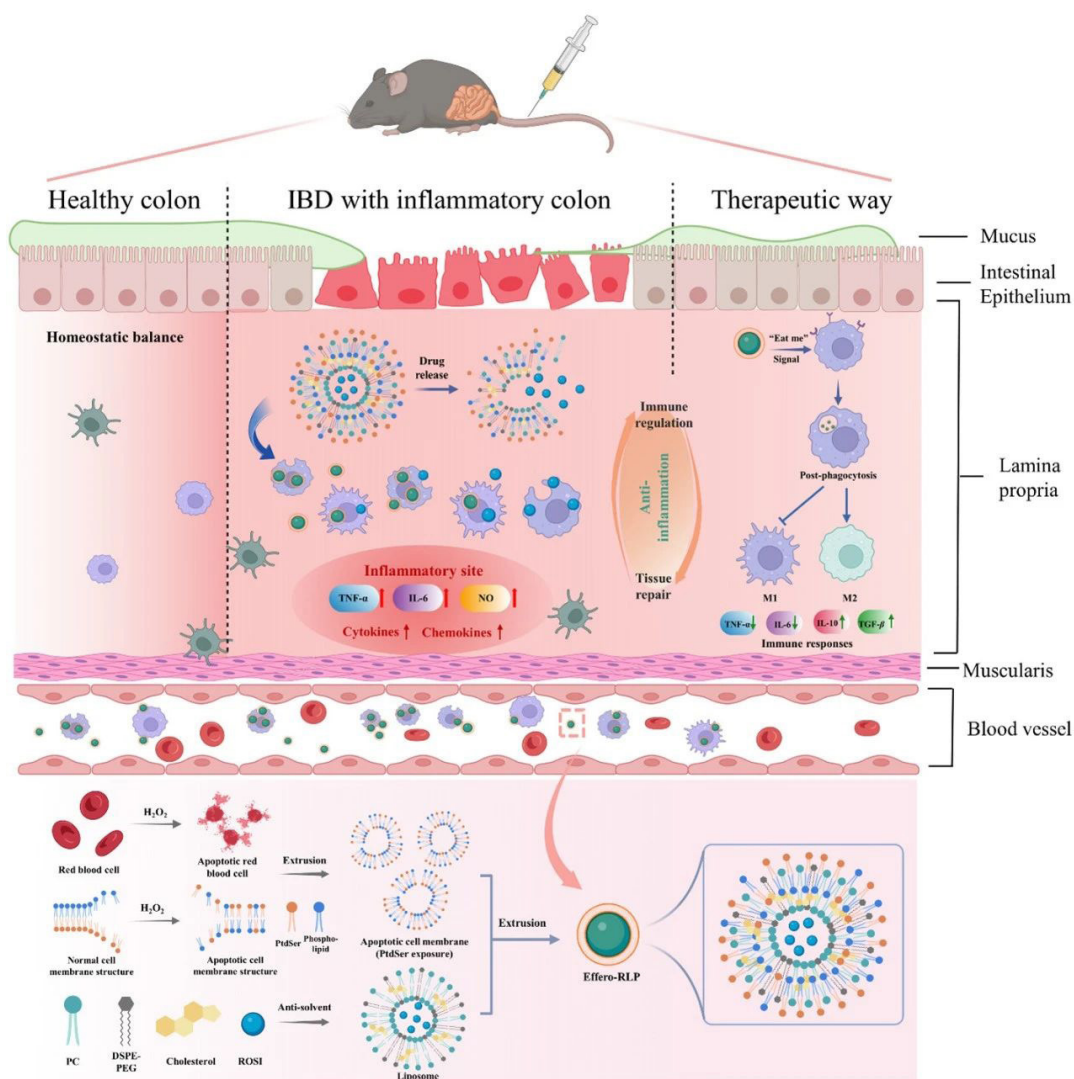
Schematic illustration of Motor@M2M@SAM preparation and its mechanism for UC treatment.

The development of a novel oral formulation for ulcerative colitis

A research team led by Ruibing Wang, Professor at the Institute of Chinese Medical Sciences (ICMS) at the University of Macau (UM), has developed a novel oral formulation for the targeted therapy of ulcerative colitis. The research team had previously developed macrophage-based nanodrugs and macrophage sponges for the targeted therapy of inflammatory diseases such as atherosclerosis and acute pneumonia, and had published two research articles in *Nature Communications*. However, both of them are injectable formulations that are not suitable for oral administration to treat intestinal inflammation and are unable to actively penetrate the mucus barrier. Building on the previous research, the research team then developed an oral medication that does not contain small-molecule drugs. This formulation uses asymmetric M2 macrophage membrane-coated Janus nanomotors (M2 macrophage-biomimetic nanorobots) embedded in sodium alginate hydrogel microspheres. The sodium alginate microspheres ensure the stability of the nanomotors in the harsh gastric environment and release them into the intestinal tract. The M2 macrophage membrane enhances the delivery efficiency of the nanomotors to the inflammatory colon and acts as a nanosponge to effectively neutralise inflammatory factors. The research is published in the prestigious journal *Science Advances* under the title 'Oral microsphere formulation of M2 macrophage-mimetic Janus nanomotor for targeted therapy of ulcerative colitis'.

A macrophages-targeted delivery system using efferocytosis biomimetic liposomes to alleviate inflammation

Professor Jiahong Lu and Professor Ying Zheng's teams from ICMS have collaborated to publish an article entitled "Synthetic Biomimetic Liposomes Harness Efferocytosis Machinery for Highly Efficient Macrophages-Targeted Drug Delivery to Alleviate Inflammation". Inflammation is a physiological response of the body, which can activate the immune system to defend against infections and resist external stimuli. Once it is out of control, inflammation could be pathogenic and will lead to multiple inflammatory diseases. Macrophages play a crucial role in regulating inflammatory responses and tissue repair, making them the primary targets for reducing inflammation. In this study, the researchers developed the biomimetic Efferocytosis-mediated Red blood cell hybrid Liposomes (Effero RLP), which fuses apoptotic red blood cell membranes with liposomes for specific targeting of macrophages. Rosiglitazone (ROSI), a PPAR γ agonist, can be used to inhibit macrophage inflammatory response by encapsulating it in Effero RLP to regulate the function of macrophages in dextran sulfate sodium salt (DSS)-induced colitis mouse model. This work has been published in the top journal *Advanced Science*.



Schematic diagram of synthesis of biomimetic liposomes and targeted therapy for colitis.

April 2024

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