

KMU Newsletter

Kaohsiung Medical University, Taiwan



Kaohsiung Medical University

Kaohsiung Medical University (KMU) was founded in 1954 as Kaohsiung Medical College by Dr. Tsungming Tu, the first Taiwanese to earn a doctoral degree in medicine. Established through the collective efforts and support of leading medical professionals and civic figures in southern Taiwan, KMU was the first medical institution in Taiwan founded and organized entirely by Taiwanese, as well as the nation's first private medical college. Guided by Dr. Tu's educational philosophy, "Learning with Passion, Research as Priority," the university has long upheld the core belief that cultivating character and humanistic values is fundamental to medical education, encouraging lifelong dedication, reverence for life, and respect for human dignity.

In its early years, KMU served as a major center for medical care and tropical medicine research in southern Taiwan. As Taiwan was later reclassified by the World Health Organization, the university strategically expanded its focus to include basic medical sciences, clinical research, and advanced healthcare services. In 1999, the institution was officially renamed Kaohsiung Medical University, becoming Taiwan's first private medical university. Today, KMU is recognized as a modern, forward-looking academic medical university, offering comprehensive medical-related programs, well-established research infrastructure, and a strong commitment to excellence in education, research, and clinical practice. Situated in the heart of Kaohsiung, Taiwan's second-largest city, KMU continues to serve as a leading hub for medical education and biomedical innovation in southern Taiwan.



Professor Chih-Hung Chuang is a faculty member of the Department of Medical Laboratory Science and Biotechnology at Kaohsiung Medical University. He has long been engaged in research on cancer immunotherapy and the development of innovative antibody-based therapeutics, with the aim of overcoming current limitations in treatment efficacy and adverse effects associated with existing immunotherapies. In recent years, his research team has successfully developed a “Pro-Antibody Platform,” an innovative strategy designed to activate immune therapeutics specifically within tumor sites. This approach enhances both treatment precision and safety, opening new avenues for the advancement of cancer therapy.

Building on these research achievements, Professor Chuang was awarded NT\$7.4 million in funding under the National Science and Technology Council's Taiwan Germination Program. His work has also been recognized with multiple international patents and the National Innovation Award, underscoring its strong clinical and commercial potential. The research team is currently engaged in collaborative discussions with several international pharmaceutical companies, actively advancing technology translation and global deployment. Through these efforts, the team aims to move academic research beyond the laboratory and deliver tangible benefits to precision medicine and patient care.

1. What originally motivated you to pursue research in cancer immunotherapy?

Professor Chih-Hung Chuang was inspired early in his career by his mentor, Professor Tain-Lu Cheng, to engage in research focused on optimizing antibody-based immunotherapy. Through his work in this field, he came to recognize the critical challenges that remain unresolved. Although immunotherapy has become a major therapeutic strategy for various types of cancer, the overall clinical response rate remains below 20 percent, with only about one in five patients experiencing significant benefit. For many individuals, immunotherapy represents a last-line treatment option. Improving its therapeutic efficacy has therefore become both an urgent and meaningful mission. Professor Chuang is committed to advancing mechanistic insights and refining drug design strategies in order to expand treatment opportunities for patients with major cancers, including breast cancer, lung cancer, colorectal cancer, and liver cancer.

2. Following the support from the National Science and Technology Council's Taiwan Germination Program, what research or development priorities do you plan to advance next?



Following support from the National Science and Technology Council's Taiwan Germination Program, the team will prioritize the commercialization of its core technologies. Efforts will focus on refining the drug development pathway and establishing a comprehensive product evaluation framework, thereby laying a solid foundation for industrial translation and market entry. In parallel, the team will actively engage with clinical partners to better define real-world medical needs and clarify the positioning of potential applications, accelerating the integration of research outcomes into clinical practice. Professor Chuang emphasizes that the transition from academia to industry is a systematic and multifaceted undertaking. Beyond technological maturity, it requires the cultivation of talent equipped with practical and translational expertise. Through the sustained commitment of students and research team members, the innovation can achieve long-term development and ultimately deliver meaningful impact in healthcare.

3. If you were to describe the “Pro-Antibody Platform” in one sentence, how would you explain it to a non-medical audience?

The “Pro-Antibody Platform” can be described as a smart drug that remains largely inactive while circulating in the body but becomes selectively activated within the tumor microenvironment, enhancing treatment precision and efficacy while minimizing effects on healthy tissues. Professor Chuang notes that while the technological breakthrough itself is significant, the real challenge lies in translating it from laboratory research to industrial-scale production and clinical application. This requires cultivating skilled talent and ensuring scalable, high-quality manufacturing, essentially moving the product from prototype development to full-scale production without compromising quality or integration.

4. What has been the greatest challenge in translating this research from the laboratory to real-world applications?

In academic research, the focus is on innovation and breakthroughs, but transitioning to the industrial stage requires a strong emphasis on quality control, process stability, and standardized validation. Scaling up from laboratory findings to large-scale production while maintaining consistent quality presents an entirely different set of professional skills and practical challenges. Compared with research-focused talent, there is still a relative shortage of professionals with both industrial insight and expertise in quality management, making this a key hurdle in translating technology into real-world applications.



5. If this research continues to progress successfully, what changes do you most hope it will bring to patients or clinical practice in the coming years?

Professor Chuang notes that even a modest 10% improvement in the effectiveness of immunotherapy would have meaningful impact for patients. In Taiwan alone, with roughly 6,000 new cases of relevant cancers each year, a 10% increase translates to hundreds of families benefiting directly. The team hopes to accelerate the initiation of clinical trials; however, the drug development process is lengthy, with Phase I through Phase III trials often taking five to eight years. Even with full commitment, substantial financial and industrial resources are required. While academic funding can support early-stage research, advancing a therapy to clinical application and market readiness relies heavily on subsequent fundraising and industry partnerships, a challenge that underscores the journey of translating innovative medical research from the laboratory into real-world impact.





Hepatobiliary and Pancreatic Medicine Team

Abstract

This study is the world's first to investigate the effects of night market operating days and residential proximity to night markets on indoor air quality and children's lung function.

Read more

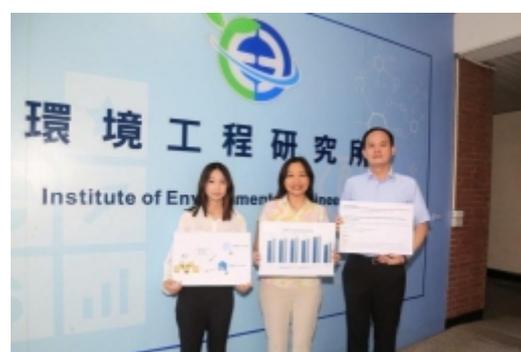
Night markets—a unique element of Asian culture—involve various cooking methods and combustion, generating air pollutants with adverse health effects. However, there is no scientific literature on whether air pollutants from night markets affect indoor air quality and the lung function of children in nearby households.

We evaluated the impacts of night market, specifically market opening days and household distance from the market, on indoor air quality and the lung function of children in nearby households. Using real-time monitoring equipment, we measured concentrations of particulate matter (PM)1, PM2.5, PM10, carbon dioxide (CO₂), carbon monoxide (CO), nitrogen dioxide, sulfur dioxide (SO₂), ozone, total volatile organic compound (TVOC), airborne bacteria, and fungi in 58 households located near a night market. Additionally, we assessed the lung function values of children living in these households.

This study is the first to reveal hazardous air pollutants emitted from night markets affect the indoor air quality and lung functions of children. PM1 and PM2.5 concentrations were significantly higher during opening days than during closing days. Additionally, we observed significantly higher indoor CO₂ in the near group than that in far group. The lung function values for children were significantly lower in households located ≤ 595 m from the market (near group) than in those located > 595 m from the market (far group).

Application and Highlights

Zhang JL, Wang TN, Lin PC, Lin KT, Chen YH, Jhang JM, Yao TC, Lin YC, Chen PS. Impacts of night market on indoor air quality and lung function of children in nearby households. *J Expo Sci Environ Epidemiol*. 2025 Mar 20. doi: 10.1038/s41370-025-00755-5. Epub ahead of print. PMID: 40113881.





Strengthening Global Impact: The Innovative Nanomedicine Laboratory Showcases Outstanding Research Achievements through Cutting-Edge Nanotechnologies

Abstract

The Innovative Nanomedicine Laboratory, established in 2020, integrates nanotechnologies with microbial electrochemistry to develop novel medical solutions for contemporary challenges. Our current focus includes the development of advanced treatments for various diseases, personalized biosensors, and microbial battery systems.

Read more

The Innovative Nanomedicine Laboratory applies advanced nanotechnology to tackle contemporary medical challenges through creative material design and interdisciplinary collaboration. This year, we developed an amino acid–modified copper oxide electrode for ketone metabolite detection (Langmuir, 2025) and catalytic nanomaterials capable of releasing oxygen and nitric oxide to promote wound healing (ACS Appl. Bio Mater., 2025).

In collaboration with Prof. Akihiro Okamoto, our team established the liposome fusion-induced membrane exchange (LIME) platform for large-scale production of functional extracellular vesicles, published in Nano Today (2025). Building on this, we worked with Prof. Chen-Sheng Yeh to create electroactive membrane-coated nanoparticles for tumor therapy (Nat. Commun., 2025) and applied similar electroactive vesicles for apoptosis detection (Adv. Mater., 2025), earning the 2025 Future Tech Award. We further developed breast cancer-targeting vesicles with excellent tumor specificity, opening new avenues for next-generation targeted therapies. In parallel, we collaborated with Prof. Chia-Hsiang Chen on a fluorescence-quenching bacterial detection system (J. Mater. Chem. B, 2024), which received U.S. provisional patent protection and KMU Spark Program support. Together with Prof. Yi-Hsin Chien, we also reported a gene methylation detection method, featured as a Small (2025) cover article. Our ongoing mission is to pioneer next-generation nanomedicines and diagnostic technologies, advancing Taiwan's biomedical innovation.



Application and Highlights

● Awards

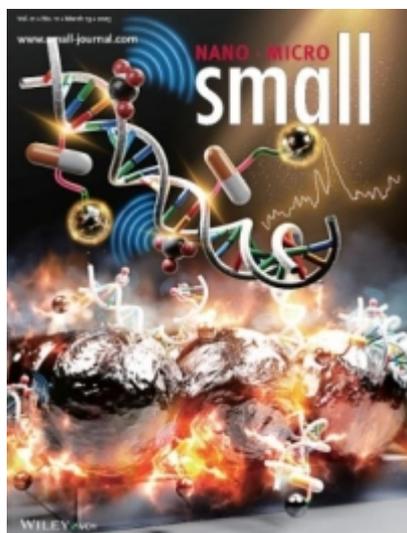
1. Young Outstanding Research Award, Kaohsiung Medical University, 2025.
2. Excellence in Paper Award, Kaohsiung Medical University, 2025.
3. Excellence in Research Achievement Award (Young Faculty Group), Kaohsiung Medical University, 2025.
4. NSTC 2025 Future Tech Award (Co-PI)

● International Collaborations

1. International collaboration with Prof. Akihiro Okamoto (National Institute for Materials Science, Japan).
2. International collaboration with Prof. Oh Seok Kwon (Sungkyunkwan University, Korea).

● Patents

1. Liposome Fusion-Induced Tumor-Targeting Vesicles Production and Its Applications (PCT)
2. Aggregation-Induced Emission Silence-Mediated Pathogen Detection Using a Rapidly Degradable Nanographenes-Embedded Polymersome (PCT)
3. Precise Methylation Detection of Magnetically Isolated Tumor Suppressor Genes by Nano Silver Adduct–Promoted Surface-Enhanced Raman Scattering (PCT)





College of Pharmacy at KMU Expands Academic Ties with the Czech Republic, Launching Research Collaborations with Three Leading Universities

To deepen international academic linkages and strengthen research capacity and talent cultivation, the College of Pharmacy at KMU recently conducted an academic visit to the Czech Republic under the support of the Phase II Higher Education Sprout Project—International Key Colleges / Fields Program. Led by Dean Shyh-Chyun Yang, the delegation visited three leading higher education institutions, Charles University, the Czech University of Life Sciences Prague (CZU), and Masaryk University (MU) to engage in college-level exchanges and substantive discussions on research collaboration. The visit successfully established a multi-nodal international cooperation network for KMU's College of Pharmacy in Central Europe.

Building upon the foundation established during the 2024 visit of the Faculty of Pharmacy at Charles University to KMU, the two institutions held formal dean-level meetings to exchange in-depth views on pharmacy education frameworks, research strengths, and models of international collaboration. Discussions focused on key research areas including natural products research, pharmaceutical analysis, drug metabolism and toxicology, and drug delivery systems. Both sides recognized the complementarity of their research capacities and reached strong consensus on advancing faculty and student exchanges, joint research projects, and the development of dual-degree programs.

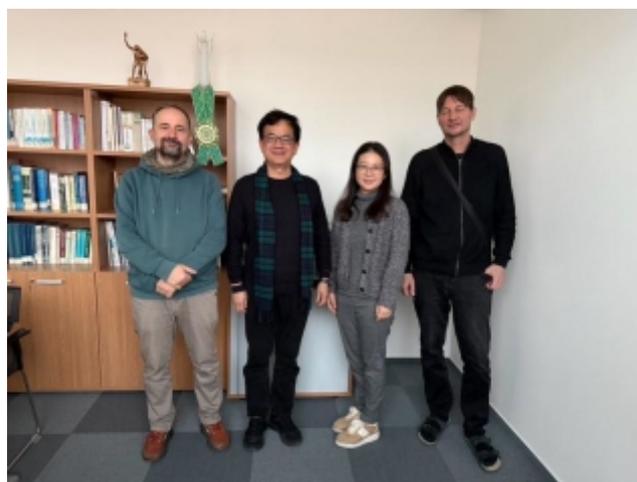
In addition to institutional-level meetings, the delegation participated in on-site visits to major research platforms and academic workshops, gaining first-hand exposure to advanced facilities such as semi-automated thin-layer chromatography (TLC) analysis systems, natural product purification and hyphenated mass spectrometry platforms, GC–MS, LC–MS, and supercritical fluid extraction (SFE) technologies. These exchanges provided valuable insights into European research models and standardized workflows in natural product development, metabolomics analysis, and green extraction technologies. Notably, Charles University has established a mature mechanism for translating natural product research outcomes into herbal products in collaboration with industry partners, offering an important reference for KMU's College of Pharmacy in promoting industry–academia collaboration and research commercialization.

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The College of Pharmacy at KMU stated that the Czech visit not only fulfilled key international engagement objectives but also successfully initiated formal collaboration opportunities with leading pharmaceutical and life sciences institutions in Central Europe. Through dean-level consultations, trilateral university exchanges, and research platform engagement, stable communication channels and shared visions for cooperation have been established. Looking ahead, the partnerships are expected to expand into more structured and sustainable collaboration across education, research, talent development, and industry-academia cooperation, further enhancing the international visibility and global competitiveness of KMU's College of Pharmacy.





KMU Namasia USB Office in the Philippines Officially Inaugurated, Pioneering a New Model for International Sustainable Development

KMU's Namasia University Social Responsibility (USR) program is reaching a new milestone on the international stage. On February 6, Professor Chih-Neng Hsu, Dean of KMU's College of Life Science and principal investigator of the Namasia iUSR program, led a delegation to the University of the Philippines Open University (UPOU) for the inauguration of the "Kaohsiung Medical University Namasia USB Office in the Philippines." This office represents the first cross-border branch established under Taiwan's Ministry of Education USB initiative and formally extends KMU's years of USB experience in Taiwan's indigenous communities to the Philippines through the International University Social Responsibility (iUSR) framework, opening a new chapter in transnational social responsibility collaboration.

The opening ceremony was held at UPOU's world-class multimedia production building. Dean Hsu, UPOU Vice President Aurora V. Lacaste, and representatives from both universities jointly cut the ribbon, officially launching the KMU Namasia USB Office in the Philippines. The new office symbolizes the institutionalization and long-term commitment of the partnership between the two universities.



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This collaboration marks not only a milestone in KMU and UPOU's long-standing partnership but also addresses global higher education expectations regarding social impact and sustainable development. Through the iUSR joint office, the two institutions will advance transnational USR initiatives, share practical experiences, and promote student volunteer exchanges and community engagement, supporting the University of the Philippines system in taking a stronger social responsibility role across the Southeast Asian region.

Dean Hsu emphasized, "Internationalizing the Namasia USR program represents a key transformation for KMU, moving from local engagement to global impact. We are excited to bring our years of USR implementation experience to the Philippines and work with UPOU to create a new model for sustainable education, making university social responsibility a cross-border, shared force for good." UPOU also noted that this collaboration will broaden its international perspective on social inclusion and sustainable development, deeply integrating social responsibility into teaching, research, and community service. Both universities are optimistic about the long-term social impact of this partnership, setting a precedent for Taiwan–Philippines higher education collaboration in advancing university social responsibility.





KMU International Conference on Business and Management 2026

"Innovation remains the core driver of modern healthcare and management excellence." The ICOBM 2026 brings together leading academic scientists, researchers, and research scholars to exchange and share their experiences and research results on all aspects of Innovation in Medical & Business Management.

It provides a premier interdisciplinary platform for researchers, practitioners, and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of Business and Management.

Conference Venue: KMU International Convention Center

Date: October 16 (Fri.) - October 18 (Sun.), 2026

Address: No. 100, Shiquan 1st Rd., Sanmin Dist.,
Kaohsiung City 807378, Taiwan (R.O.C.)

Please take note of the following important dates for submissions and participation.

1. Phase 1: Abstract Submission, Jun 30, 2026
2. Phase 2: Notification, TBD
3. Event: Conference Date, Oct 16-18, 2026





From Academic Rankings to Sustainable Impact: Kaohsiung Medical University Takes the Global Stage

KMU has delivered outstanding performances in internationally recognized rankings. In the 2025 edition of the Academic Ranking of World Universities (ARWU), KMU ranked No. 1 in Taiwan in Basic Medical Sciences, No. 2 in both Dentistry and Nursing, and No. 4 in Pharmacy, demonstrating its strong research capabilities and interdisciplinary excellence in the medical sciences. In addition, in the 2026 Times Higher Education (THE) Interdisciplinary Science Rankings, KMU secured 8th place nationwide and 2nd among private universities in Taiwan, underscoring its achievements in cross-disciplinary research and innovative integration.

Beyond academic distinction, KMU has also made significant strides in advancing global sustainability. In the United Nations Sustainable Development Goals (SDGs) impact indicators, KMU ranked 8th worldwide for SDG 3, "Good Health and Well-Being," and No. 1 in Taiwan for SDG 5, "Gender Equality." These accomplishments highlight the University's international impact and enduring commitment to health promotion, medical advancement, and social responsibility.





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