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China Medical University  
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## Grand Opening of College of Biomedical Engineering



On August 1<sup>st</sup>, 2019, China Medical University held the opening ceremony of its 9<sup>th</sup> college - College of Biomedical Engineering. CMU President Mien-Chie Hung encourages this new team to cultivate more high-level talents and boost the development of Taiwan's biomedical engineering industry.

"AI has become a trend in the development of global medical industry. Taiwan is becoming an aging society, and therefore the development of medical devices is

booming. The influences of medical device invention and the use of artificial intelligence will gradually surpass the physicians in some fields, so we are in need of integrated talents with biomedical engineering professions. With the establishment of College of Biomedical Engineering, we will work hard in developing medical materials, medical engineering, and medical AI research & development, and hope to cultivate more talents for Taiwan in the future," said President Mien-Chie Hung.

The College of Biomedical Engineering has two Programs: the Master's Program for Biomedical Engineering, and the Ph.D. Program for Medical Engineering and Rehabilitation Science.

Professor Yio-Wha Shau, Dean of the new college, said in his remarks, "I feel honored to join China Medical University. I look forward to working with the team in China Medical University Hospital, and to commercializing the research concepts of medical materials, engineering, and AI. I hope to attract investigators, to bring benefits to patients, and to reduce the burdens on physicians."

## 2019 Freshmen Orientation

On September 2<sup>nd</sup>, 2019, President Mien-Chie Hung warmly welcomed freshmen students to join China Medical University and encouraged them to learn subjects from various fields to find their goals. With efforts and persistence, President Hung believes that CMU students can surely stand out in their professional fields.

President Mien-Chie Hung, Vice-President Cheng-Chieh Lin, administrative officers and deans of all colleges welcomed the 2019 freshmen of more than 1,400 students. "CMU will continue to recruit top-notch researchers and faculty, invest more teaching and research resources, and provide access to the latest medical knowledge and research methods. In addition, CMU's great reputation in the international community will enhance the competitive advantages of our students in each field, and make Taiwan be seen in the world," said President Hung.

The entire orientation activities included department introduction, curriculum mapping, and promotion for gender equality, intellectual property rights, and campus safety. CMU also held a "student club exhibition fair" and a welcome party for the freshmen students. The activities gathered the students and faculty of CMU and showed the lively and passionate atmosphere of campus life.



## Research Breakthroughs

### A New Direction for Asthma Prevention! Professor Bing-Fang Hwang and His Research Team Published Research Findings in "The Journal of Allergy and Clinical Immunology"



Professor Bing-Fang Hwang, Dean of the College of Public Health, led a research team that investigated the correlation between exposure to PM2.5 while in the womb and infancy and later development of asthma. They discovered that the "vulnerable time windows

might be within early gestation and midgestation and infancy." The research was published in the *Journal of Allergy and Clinical Immunology* (Volume 143, Issue 6, Pages 2254–2262.) and was honored as the "Latest Research Summaries." It was also published on the homepage of the American Academy of Allergy, Asthma & Immunology.

The research found that during the 6<sup>th</sup> - 22<sup>nd</sup> gestational week and the 9<sup>th</sup> - 46<sup>th</sup> week after birth, which conform to the critical periods of lung development, exposure to PM2.5 can lead to later development of asthma. Asthma cannot be cured, but can only be managed with drugs and environmental improvement. As a result, it is critical to prevent the disease. To reduce the risk of asthma, the research suggests that sensitive populations, such as pregnant women and infants, should avoid outdoor activities during the critical periods and when the PM2.5 concentration is high.

### Professor Jia-Zer Tsay Received the National Innovation Award by Discovering "A Novel Serological Test for Diagnosis of Rheumatoid Arthritis"

Currently, there are two major methods to diagnose rheumatoid arthritis: rheumatoid factor (RF), and antibodies against citrullinated protein antigens (ACPA). Unfortunately, at least 1/3 of the patients show negative results for RF or ACPA. CMU Research and Development Center for Immunology led by Professor Jia-Zer Tsay, discovered "A novel serological test for diagnosis of rheumatoid arthritis." This novel test can effectively improve the rate of positive result (from 54% to 80%) of rheumatoid arthritis patients.

"Rheumatoid arthritis is a chronic, destructive autoimmune disease that can only be diagnosed by clinical signs. If rheumatoid arthritis is not treated immediately, the patients' condition might become aggravated and even debilitating. Therefore, we developed this novel serological test, which not only improves the positive detection rate of clinical diagnosis, but also provides early treatment to patients that can effectively reduce the subsequent medical cost and improve the patients' quality of life," said Professor Tsay.

The Research and Development Center for Immunology of China Medical University was established



in 2015. It focuses on the research of the pathogenic mechanisms of autoimmune diseases, especially the role of protein citrullination, including diseases such as rheumatoid arthritis and lupus erythematosus. By discovering novel herbal medicine, drugs, and peptides, and dedicating to the diagnosis and treatment of autoimmune diseases, the Research and Development Center for Immunology certainly enhances Taiwan's research energy in the field of immunotherapy.

## Professor Shih-Chieh Hung and His Research Team Published Their Research Findings in Nature Communications



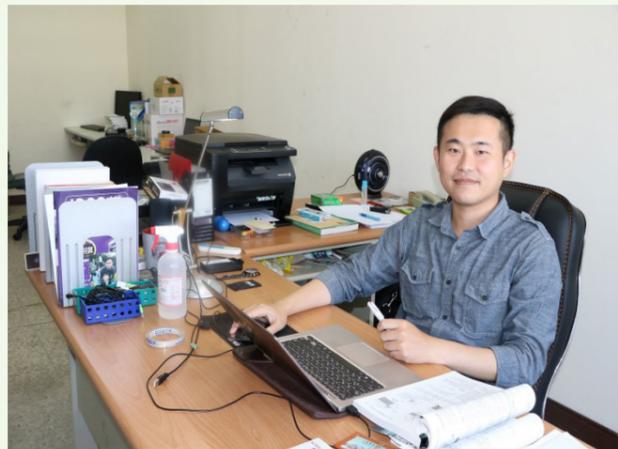
Teeth have two interesting facts. First, teeth are actually harder than bones and second, it is extremely rare to find a tumor inside teeth. Interestingly, these two phenomena share similar underlying mechanisms. A research done by CMU team led by Professor Shih-Chieh Hung has found a possible reason. The research confirmed that stem cells derived from dental pulp have decreased DNA methylation and histone modification along with higher PTEN activation, thereby promoting their fates to become the hardest tissue in the body and reducing their potential for oncogenesis.

This research finding “Methylation and PTEN activation in dental pulp mesenchymal stem cells promotes osteogenesis and reduces oncogenesis” was published in the journal Nature Communications (Volume 10, Article number: 2226) and received high attention internationally.

## CMU Assistant Professor Ming-Chieh Li and Research Team from Harvard University Published Breakthrough Research Findings in Environmental Research

Dr. Ming-Chieh Li, Assistant Professor of CMU College of Public Health, cooperated with research team from Harvard University and found that a higher concentration of  $\beta$ -carotene in the blood helps alleviate the insulin resistance effect caused by plasticizer “Bis(2-ethylhexyl)phthalate” (DEHP), namely the main symptom of prediabetes. This finding was published in the journal Environmental Research and it received high attention from the international society.

Dr. Li explained, “Our team adopted the National Health and Nutrition Examination Survey (NHANES), and applied the new statistical model-Bayesian kernel machine regression (BKMR) to analyze the effects of various plasticizers on insulin resistance. We found that although the concentration of many plasticizers in urine is related to insulin resistance, DEHP has the closest relationship with insulin resistance. After excluding the effect of other types of plasticizers, the higher the concentration of DEHP in urine, the more severe the insulin resistance. There is a dose-dependent relation.”

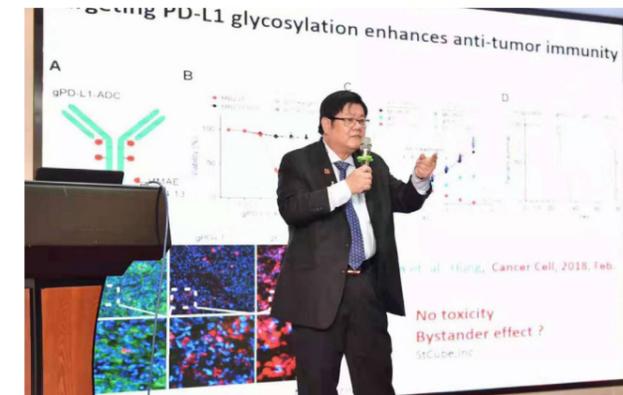


In addition, the research team has tested several common nutrients with antioxidant efficacy, and discovered that the higher the concentration of  $\beta$ -carotene in the blood, the less the insulin resistance caused by DEHP. This finding shows that  $\beta$ -carotene may exert a protective effect on insulin resistance caused by DEHP, while no similar effects were seen in other antioxidants.

“Our research is the first epidemiological study showing that  $\beta$ -carotene helps alleviate the insulin resistance caused by DEHP. However, what we’ve done is a cross-sectional study, so more research of different generations is needed for further verification,” said Dr. Li, “Although  $\beta$ -carotene helps alleviate the insulin resistance caused by DEHP, it is best to avoid plasticizers to keep a good health condition.”

## President Mien-Chie Hung’s Involvement in International Summits

President Mien-Chie Hung is an international renowned cancer scientist. This summer, President Hung was invited to the “The 6<sup>th</sup> Frontier of Xiangya International Melanoma Forum,” “2019 International Cancer Symposium in Kunming,” and the “Hangzhou International Breast Cancer Summit.” He shared his research insights and exchanged ideas with cancer scientists from all over the world, which made Taiwan’s cancer research be seen on the world stage.



### 2019 International Cancer Symposium in Kunming

The 2019 International Cancer Symposium in Kunming was one of the commemorative events of the 60<sup>th</sup> anniversary of Kunming Institute of Zoology, Chinese Academy of Science. Experts and scholars from various countries gathered to make profound discussion on the theme of “basic cancer research and clinical treatment.” In the symposium, President Hung again shared his research finding “Marker-guided target therapy, PARP and EGFR inhibitors, and development of effective immune checkpoint therapy.”

### The 4<sup>th</sup> Hangzhou International Breast Cancer Summit

At the 4<sup>th</sup> Hangzhou International Breast Cancer Summit, President Hung served as the keynote speaker and shared his research on breast cancer “Target therapy for PARP inhibitor and development of immune checkpoint.” The venue was packed with attendees and the participating scholars had a productive discussion. President Hung’s speech inspired a fruitful academic exchange among international cancer scientists.

### The 6<sup>th</sup> Frontier of Xiangya International Melanoma Forum

President Mien-Chie Hung was invited to the 6<sup>th</sup> Frontier of Xiangya International Melanoma Forum as a keynote speaker. The forum was held at Xiangya Hospital, Central South University, China. In the meeting, CMU President Mien-Chie Hung shared his latest research “Marker-Guided target therapy and immune checkpoint therapy,” and also stated that early diagnosis and treatment can greatly improve the cure rate of melanoma.

The 6<sup>th</sup> Frontier of Xiangya International Melanoma Forum also invited top scientists from United States, Australia, South Korea, and Japan, to give keynote speeches. The attendees focused on the discussion of recent advances in melanoma basic research, translational research, and clinical research, particularly in the molecular mechanisms of melanoma development, new targeted drug development for melanoma, and the clinical application of melanoma immunotherapy.



## International Partnerships

### The 3<sup>rd</sup> CMU-NUS Joint Symposium

China Medical University and National University of Singapore (NUS) held the 3<sup>rd</sup> CMU-NUS Joint Symposium on August 30<sup>th</sup>, 2019. Director Dow Rhoun Koh of International Relations, NUS Yong Loo Lin School of Medicine, led eight scholars from NUS to visit CMU for academic exchanges. Director Koh hopes that the two universities can establish a broader international cooperation in new drug development and Chinese medicine, while President Mien-Chie Hung of CMU shared his innovative research and breakthrough on immune checkpoint therapy.

The 3<sup>rd</sup> CMU-NUS Joint Symposium focused on the research discussion in aging, cancer, neuroscience, stem cell, and Chinese medicine. Scholars from both universities have formed collaborative research teams in those fields. In addition, 20 postdoctoral researchers and



PhD students from CMU presented their research in the poster session. The symposium attracted over 60 faculty members, postdoctoral researchers and students from CMU. It was an excellent academic exchange between CMU and NUS.

### The 2<sup>nd</sup> CMU-HU Joint Symposium



China Medical University and Hokkaido University (HU) became sister universities in 2018. On September 3<sup>rd</sup>, 2019, China Medical University held the 2<sup>nd</sup> CMU-HU Joint Symposium. The enthusiastic participation of the scholars from both sides showed a strong relationship between the two universities.

Vice Dean Shigetsugu Hatakeyama of Hokkaido University Faculty of Medicine and Graduate School of Medicine, was pleased with the high-quality research and heated discussion in the joint symposium. "Hokkaido University is very supportive of the bilateral cooperation between CMU and Hokkaido University," said Vice Dean Hatakeyama.

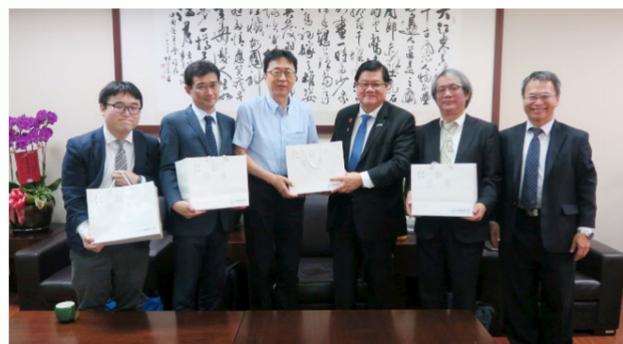
The 2<sup>nd</sup> CMU-HU Joint Symposium is a great success with the efforts of President Mien-Chie Hung, Dean Liang-Yo Yang, and all the committee members. Two universities have formed collaborative research teams in precision medicine, cell therapy, artificial intelligence, 3D printing, and cancer stem cell, and will continue to strengthen the cooperation in the above research fields.

### The 2<sup>nd</sup> CMU-UT Joint Symposium

China Medical University and the University of Tokyo (UT) held the 2<sup>nd</sup> CMU-UT Joint Symposium on September 12<sup>th</sup>, 2019. Professor Ung-il Chung of Graduate School of Engineering and Medicine, the University of Tokyo, led four scholars from UT to visit CMU for academic exchanges.

Dean Liang-Yo Yang served as the moderator of the symposium, and during the session of future collaboration discussion, representatives from both universities reached agreement to establish cooperation in various fields including big data, artificial intelligence, precision medicine, aging, cancer, stem cell, and human biological database.

In addition to the symposium, Dean Yang also led the scholars from UT on a visit to the Chinese Medicine Hospital and Pharmacy of China Medical University Hospital. They were impressed by the training of Chinese medicine doctors and the modernization of Chinese medicine treatment at China Medical University Hospital.



## CMU Won the Bid to Host the 2021 International Congress of International Society for Ethnopharmacology

China Medical University has a good reputation for its excellent research in modern medicine, traditional medicine and pharmacology. During the 19<sup>th</sup> International Congress of International Society for Ethnopharmacology (ISE) in Dresden, Germany, CMU successfully won the bid to host the 2021 International Congress, which will be the first time that the ISE International Congress has been held in Taiwan.

The International Society for Ethnopharmacology (ISE) consists of international scholars specialized in traditional medicine, herbs, and plants. It is committed to the research, classification, extraction, and quality control of traditional medicine, herbs, and plants, with the aim to improve the medical quality and standard.

The CMU group attending the 19<sup>th</sup> International Congress was led by Dean Liang-Yo Yang (Dean of Global Affairs) and Associate Dean Hung-Rong Yen (Associate Dean of the College of Chinese Medicine). During the congress, Dean Liang-Yo Yang promoted CMU's research achievements and the excellent healthcare service of CMUH. Associate Dean Hung-Rong Yen introduced CMU's outstanding achievements in Chinese medicine, Chinese herbal medicine, and new drug development. Associate Dean Yen proposed CMU as a great host for the 2021 ISE International Congress; Dean Yang also stated that CMU is experienced in organizing international conferences.

CMU's outstanding research capacity and CMUH's high quality healthcare services are highly recognized in the world. Therefore, CMU stood out and won the privilege to host the 2021 ISE International Congress.



## Campus/Student News

### Student Overseas Volunteer and Service Team Attended the Flag Presentation Ceremony at the Office of the President



The Youth Development Administration, Ministry of Education, invited CMU "Malaysia International Volunteer and Chinese Medicine Service Team" and "Northern Thailand International Volunteer and Service Team" to the Office of the President. President Ing-Wen Tsai met the representatives of the service teams and presented them with the flag. President Tsai encouraged young people to make Taiwan be seen in the world through overseas volunteer services. She said that the specialty and creativity of the young people make them the best representatives of Taiwan and students are the most firm bridge between Taiwan and the world.

### Retrospective Exhibition Held by Medical Service Team of CMU Department of Chinese Medicine

A retrospective exhibition was held to share the Medical Service Team of CMU Department of Chinese Medicine's volunteering services in the rural area of Taiwan. The exhibition displayed photos that evoked people's awareness of the importance of medical care in rural areas.

"Caring for Taiwan and people's health is one of the social responsibilities of a university. Further, Chinese medicine also plays an important role in remote places with insufficient medical resources," said President Mien-Chie Hung. "Our faculties and students hold the spirit for humanistic care. The volunteer service is very meaningful because it helps improve the health condition and quality of life of the local residents."

