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Dr. John S. Kuo, Newly Appointed Vice-President of China Medical University

Dr. John S. Kuo is Committed to Continuous Innovation and Self-Transcendence

Dr. John S. Kuo, a world famous neurosurgeon and brain tumor scientist, has returned home to Taiwan! He accepted the invitation of Chairman Chang-Hai Tsai and President Mien-Chie Hung to serve as the Vice President for Medical Affairs of China Medical University starting in September 2021. With his clinical excellence and professional achievements from top US universities and academic medical centers, Dr. Kuo will help advance Taiwan's biomedical field to world class level and cultivate a new generation of talented medical personnel to further contribute to our society.

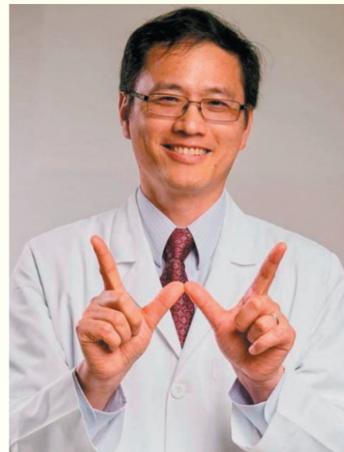
"I will work hard as a role model," said Dr. Kuo, "In this fast-paced era, we will make breakthroughs by continuous innovation and insatiable curiosity to bring new hope for treating human diseases."

Dr. Kuo is an internationally renowned neurosurgeon specializing in complex brain tumor surgery, pituitary surgery, and stereotactic radiosurgery. He has created and led multidisciplinary clinical programs of excellence. Dr. Kuo co-authored influential national guidelines for brain tumor clinical management. He is also a leader in the Brain Tumor Executive Committee and other major US neurosurgery, neuro-oncology, and medical societies. Along with outstanding clinical performance, Dr. Kuo has received many research grants and academic honors.

Over many years, Dr. Kuo has been chosen by his peers as one of America's Top Surgeons and is highly regarded by Castle Connolly Top Doctors. The Academy of Neurological Surgeons voted him as a top US academic neurosurgeon out of over 5000 US/Canadian neurosurgeons. The Society of University Surgeons also voted him as a top US surgeon across all surgical specialties.

Dr. Kuo was born in Kaohsiung, Taiwan and moved to New York for further education. Dr. Kuo graduated from Harvard University with highest honors and won a full scholarship from Harvard Medical School and MIT, earning both a MD and a PhD. Dr. Kuo then was trained in clinical neurosurgery at the University of Southern California and was funded by the American Brain Tumor Association for postdoctoral training at the University of Toronto. Later, Dr. Kuo was recruited by the University of Wisconsin-Madison, earning tenure as Professor of Neurological Surgery and Human Oncology, and leading the Brain Tumor Program at UW's Carbone Cancer Center before moving to Texas in 2018, to work with the Dell Medical School at the University of Texas at Austin (UT).

Dr. Kuo is the Founding Chair of the Department of Neurosurgery and the Surgical Director of the Mulva Clinic for the Neurosciences. He is also a Professor in the UT Institute of Neuroscience and the Institute for Cell and Molecular Biology. In only 3 years, and despite the COVID-19 pandemic, Dr. Kuo established a brand-new department and recruited many nationally renowned clinicians and clinician-scientists to advance the clinical care, research, and education of neurological diseases. They serve patients at many Austin area hospitals, researching innovative surgical



techniques, developing new brain tumor immunotherapies, and collaborating on engineering new technologies for functional recovery after stroke, trauma, and neurodegenerative diseases. Dr. Kuo and his team teach and mentor many UT undergraduates, medical students, graduate students, and fellows. He is also poised to start a new neurosurgery residency program at UT.

To develop novel cancer therapies and improve clinical outcomes, Dr. Kuo supervised a research group studying cancer stem cell biology and led many multi-institutional clinical trials. He has authored many high impact scientific publications and has delivered many invited presentations at prestigious institutions in the US, including Harvard Medical School, Massachusetts General Hospital, MD Anderson Cancer Center, Washington University in St. Louis, and the University of Pennsylvania. In Taiwan, he

has also given talks at the Academia Sinica, National Taiwan University, and China Medical University. Dr. Kuo has also been invited to speak at international conferences including the Asian Australasian Society of Neurological Surgeons, ASEAN Neurological Congress, and the World Academy of Neurological Surgeons.

In addition to research, Dr. Kuo is also enthusiastic in cultivating new generations of talents, and won multiple teaching awards at Harvard, MIT, and the University of Wisconsin for his dedication and excellence in teaching and mentoring. Dr. Kuo is eager to engage with the faculty and staff of the prestigious China Medical University Healthcare System. He is looking forward to passing on his valuable experiences to the over 7,000 talented students and trainees of China Medical University by serving as a role model for them.

CMU Ranks High in Global Views Monthly's 2021 Taiwan's Best University Rankings

On June 2021, Global Views Monthly released its 2021 Taiwan's Best University Rankings. China Medical University rated high in several of the categories.

China Medical University is the best university in terms of Field-Weighted Citation Impact, a measure of how often research is cited. China Medical University maintained its 2020 ranking as the second best private university. Due to the rising trend of AI medical care because of the pandemic, China Medical University rose to become the second best medical university.

China Medical University made great progress in Academic Achievement, leaping from tenth place (2020) to fifth place this year. While fifth overall, the university is first among private universities. In Internationalization, China Medical University advanced 13 places.

China Medical University also ranked high in the categories dealing with the UN's Sustainable Development Goals. The university has cre-

ated the motto of "A Better Life, A Better World," which is the core value of China Medical University's University Social Responsibility (USR) and Sustainable Development Goals (SDGs).

China Medical University ranked ninth in SDGs Contribution and World University Influence. The university is also a Top 30 University in Social Prestige, an improvement of eight places over last year. As one of the largest medical universities in Taiwan, CMU focuses on the development of both Chinese and western medicine. China Medical University puts equal emphasis on humanities and professional knowledge, integrated basic, and clinical medicine. The university attaches great importance to the environment, social, and governance sustainable goals.

Dean Cheng-Chun Lee, convener of the USR and SDG Office, said that promoting the goal of "A Better Life, A Better World" is an important mission as a medical university. Even though the pandemic situation is still severe, CMU will continue to make efforts in social care and services.



Outstanding Awards Received by CMU Faculty

Professor Yi-Wen Chen Receives the “2021 Future Technology Award” with Her Team’s Development of a Precision Drug Screening Platform

The cross-university research team of the multi-dimensional printing research and translational center led by Professor Yi-Wen Chen (Graduate Institute of Biomedical Sciences), has developed the first screening platform for patients’ in vitro oncology drugs that successfully makes use of Taiwan’s clinical resources and cross-field cooperation.



The platform, that biofabricates the patient-specific tumor-on-a-chip system for medical predictions, provides doctors with accurate diagnosis and guidelines for more precise prediction of treatments. This not only benefits cancer patients, but also demonstrates the outstanding strength of Taiwan’s biomedical technology. As a result of their work, the team was awarded the 2021 Future Technology Award.

The new platform focuses on applying the tumor cells of patients to establish the in vitro tumor characteristics and micro-environment similar to that of the patient’s body, and accurately testing the effect of cancer drugs on tumor cells in the 3D tumor-like sphere chips that meet the in vitro physiological conditions.

In terms of clinical research, Professor Chen’s team is also cooperating with the lung cancer research team of China Medical University Hospital. They have published many research results relevant to clinical application and provided doctors with more possibilities to prescribe medication and more effective treatment.

Professor Wen-Chen Tsai Receives the 2021 National Excellent Teacher Award from Ministry of Education

The National Excellent Teacher Award is the highest honor in Taiwan’s education circles. Professor Wen-Chen Tsai from the Department of Health Services Administration, was one of 10 university teachers nationwide to be given this award in 2021. Professor Tsai said with gratitude that his life was full of challenges and setbacks. He was diagnosed with bone cancer just shortly after he received a PhD scholarship from the United States. After treatment, he went to the Tulane University to pursue a PhD in health service management. After completing his study, Professor Tsai has been engaged in education services for 23 years. He does not treat himself as a patient, but like other teachers, he made a lot of efforts in teaching, conducting research, and mentoring students. His passion for education and devotion to teaching and nurturing talents made him an outstanding role model for teachers. In addition, Professor Tsai has won many awards from the government and CMU, including awards for excellent teachers, outstanding researchers, and special contributions.

“Life is full of challenges and unpredictability. We have to cherish every moment.” Professor Tsai often shares his life beliefs with students, hoping that they will live their lives to the fullest.



CMU Associate Professor Shin-Lei Peng and Dr. Pei-Chen Chang Receive the “Ta-You Wu Memorial Award” from Ministry of Science and Technology

Associate Professor Shin-Lei Peng, Department of Biomedical Imaging and Radiological Science



Associate Professor Shin-Lei Peng has long invested in exploring the secrets of the brain with Magnetic Resonance Imaging (MRI). She has discovered many new perspectives in the research for brain neuroscience. For her outstanding and innovative contribution, she was awarded the 2021 “Ta-You Wu Memorial Award” by the Ministry of Science and Technology.

Associate Professor Shin-Lei Peng integrates her enthusiasm for brain research into teaching, and her teaching materials include new introductions, perspectives, and practical experience. Moreover, she works to transform the knowledge from the textbook into clinical applications. This makes her courses more interesting and practical. The courses offered by Associate Professor Peng all received excellent feedback from students and are ranked in the top 5% at CMU. Besides teaching, Associate Professor Peng also helped seniors prepare for national licensing exams. In 2017, the passing rate for the licensing exam among CMU students in the Department of Biomedical Imaging and Radiological Science was 95%, the highest in Taiwan.

Dr. Pei-Chen Chang, Director of Child and Adolescent Psychiatry Division, China Medical University Hospital

Dr. Pei-Chen Chang devotes herself to the research of nutrition medicine for children and adolescents with mental disorders, and specializes in the use of omega-3 fatty acids for the treatment of Attention Deficit Hyperactivity Disorder (ADHD).

The research done by Dr. Chang has found that children with ADHD lack omega-3 fatty acid (EPA and DHA), and that giving them supplements with omega-3 fatty acids can improve the clinical symptoms and cognitive functions of children with ADHD. In 2017, Dr. Chang published the original research regarding the concentration of endogenous omega-3 fatty acids (EPA) in children with ADHD. The research was published in *Translational Psychiatry*. This study found that high-dose EPA can improve the cognitive function of attention and alertness in children with ADHD. However, children with higher EPA concentrations in their body have no obvious effect. Dr. Chang’s recent research has also found that children with ADHD have higher inflammatory response, supporting the role of anti-inflammatory theory in the treatment of ADHD.

Dr. Pei-Chen Chang’s comprehensive research in ADHD has made her an internationally renowned young scholar. Dr. Chang not only publishes her research in prestigious journals, but also has won many awards in the field of psychiatry, neuroscience, and nutrition. Due to Dr. Chang’s research and innovation, she was awarded the 2021 “Ta-You Wu Memorial Award” by the Ministry of Science and Technology.



Research Breakthroughs

An Anti-corona Chinese Medicine has been Developed! President Mien-Chie Hung and Research Team Announce Research Findings on the Inhibitions of Variants

Academician Mien-Chie Hung, President of China Medical University, and his research team recently found a new function of disulfiram, fighting the variants of COVID-19. Disulfiram was discovered in the FDA-approved clinical drug library. It exerts the potential to block the invasion of COVID-19 variants. In addition to discovering the new function of disulfiram, the research team also cooperated with Chinese medicine practitioners to develop Pandemic Prevention Herbal Tea No.1 & No.2. These two herbal teas can also help protect the body from COVID-19. These novel research findings, using both western and Chinese medicine, are making contributions in the fight against the pandemic, along with improving global health.

Although people have been receiving vaccines against COVID-19, new variants of the disease are leading to concerns over possible vaccine shortcomings. COVID-19 invades the cell through the binding of its spike proteins to the cell receptor ACE2. With the help from other proteins like TMPRSS2, the research team actively developed safe and effective small molecule drugs and Chinese Medicine that can block these viral infection mechanisms.

Disulfiram not only can reduce the replication of COVID-19, it also has been found to inhibit the infection efficiency of the virus, including the variants of the disease. The mechanism mainly lies in its ability to block the binding of the spike proteins on the surface of the virus to the host cell surface receptor ACE2.

China Medical University is known for its excellent researches on the function of Chinese herbal medicine. Dr. Sheng-Teng Huang, who worked on the development of Pandemic Prevention Herbal Tea No.1 & No.2 stated that the teas can enhance patients' immunity and reduce virus invasion. Based on the formula of Herbal Tea No.1, Dr. Huang and the research team further developed CMU's Anti-corona Chinese Medicine Formula, a more effective compound medicine. The formula has been experimentally proved to exert the ability to block the binding of spike protein to cell receptor ACE2, and thus to inhibit the variant viruses.

"The main reason for the resurgence of the ongoing pandemic in the world is that there are variants that reduce the efficacy of the vaccines and drugs. Disulfiram is an existing drug that has been approved in many

countries. The CMU's Anti-corona Chinese Medicine Formula is also a relatively popular and inexpensive option. With the abilities to inhibit virus infection and viral replication, the CMU's Anti-corona Chinese Medicine Formula provides a new possibility for the clinical treatment of COVID-19," said President Mien-Chie Hung.



New Discovery of Skin Whitening Cosmetics: CMU Research Center for Chinese Herbal Medicine Published Research Findings in *Redox Biology*

Good news for people who love skin care! The research team of CMU Research Center for Chinese Herbal Medicine discovered that Pterostilbene, a natural derivative of resveratrol, can induce autophagy in melanocytes to inhibit melanin production and exhibit whitening effects. Their study "The in vitro and in vivo depigmenting activity of pterostilbene through induction of autophagy in melanocytes and inhibition of UVA-irradiated α -MSH in keratinocytes via Nrf2-mediated antioxidant pathways" was published in the August 2021, issue of *Redox Biology*. It proved that pterostilbene is a safe and effective Chinese herbal medicine that can be applied in cosmetics. Pterostilbene is a good natural antioxidant that is lipophilic and can be used for oral administration.

Tanning occurs when UV rays penetrate into the skin to accelerate the synthesis of free radicals and melanin.



As UV rays irradiate melanocytes, they will stimulate tyrosinase to form melanin. On the other hand, autophagy is the process in which cells decompose organelles or substances with abnormal gaining or loss of function. Melanosomes in melanocytes are responsible for the synthesis and storage of melanin. The key finding of this research is that pterostilbene can induce the autophagy in melanocytes to degrade melanosome and inhibit the production of melanin.

In recent years, cosmetic companies are using Chinese herbal medicine and natural nutrients to produce whitening effects. However, most natural nutrients cannot easily pass through the stratum corneum and skin cell membrane. Therefore, with the ability to make skin cells produce antioxidant substances and effectively reduce tanning caused by UV rays, pterostilbene is a highly potential cosmetic whitening product.

Achievements by CMU Students

"Tao-Fan Academy" a Student Startup, Won the "Innovation Potential Award" in the BeChangeMaker Competition

"Tao-Fan Academy" is a startup team founded by two students, Chih-Fan Kuo (Medicine, CMU), and Tao Yang (Computer Science, Brigham Young University). The academy recruited students from Taiwanese aboriginal families in rural areas, as well as American students of the same age for online language and cultural exchanges. Their program, "The Online Cultural Exchange Camp for Students of the Same Age in Taiwan and the US," was highly recognized in the BeChangeMaker Competition (Ministry of Labor) where they were honored with the Innovation Potential Award.

Taiwan's rural education suffers from not only a lack of resources, but also the lack of companionship and cultural stimulation. The program of Tao-Fan Academy aims to design a series of online courses to provide Taiwanese aboriginal students a platform to share their culture and language, and to make friends with students in the US. Students can learn the skills of cross-cultural communication and cooperation, and enhance their international horizon and the ability to adapt to different cultures. In 2021, a total of 30 students participated in the camp.

"We hope that after participating in our courses, the rural Taiwanese aboriginal students can learn about their



uniqueness and furthermore establish a cross-cultural network that can cooperate with each other and share resources," said Chih-Fan Kuo. "Our clients in the US are the American students who want to learn Chinese. Through the online exchange with Taiwanese students, they can learn to help each other as equals and to expand their global vision. In addition, we provide some basic programming language courses to cultivate the students' skill in information and communication technology," said Tao Yang.

Tao-Fan Academy is a startup enterprise team mentored by the CMU I-Lab. Tao-Fan Academy has built a bridge of language and cultural communication that connects different regions and people. "This is very impressive and I am very honored to be involved in the founding of Tao-Fan Academy," said Professor Min-Hao Yuan, the director of CMU I-Lab.