Chien-Huang Lin – President, Taipei Medical University, Taiwan

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Dr Chien-Huang Lin, tenth president of Taipei Medical University, shares his personal mission upon taking the role, elaborates on the research strengths of TMU, and goes on to discuss the university's unique commitment to translational research, innovation collaboration, and talent development.

Can you please introduce yourself as president and Taipei Medical University to begin the interview?

My scientific specialty is in signal transduction and new drug development especially in the treatment of lung fibrosis. I received my bachelor's degree from Taipei Medical University (TMU) in 1989 and therefore the university holds a very special place in my life. I received my Ph.D. in pharmacology from the National Taiwan University and then have been a professor at TMU for over 20 years. I believe it is my destiny to grow alongside TMU and bring the university to the next level as a world-class medical university.

TMU was founded in 1960 and has been able to grow successfully without a regular official budget from the government or funding from foundations. We have 11 colleges including medicine, dentistry, pharmacy, nursing, public health, nutrition, science and technology, management, engineering, humanities and social sciences, and interdisciplinary studies. We have about 6000

students and 650 faculty members – a nine to one student-faculty ratio, one of the best in Taiwan.

What are TMU's research focus and what major contributions has the university made to these fields?

TMU emphasizes clinical-oriented translational research. In particular, we are focused on cancer, neuroscience, pulmonary medicine, and AI medicine. In cancer, we work on new drug development, molecular diagnosis, and precision medicine. In 2018, TMU received an impressive cancer centre grant from the Ministry of Education for cancer translational research. So far, we have had promising success in new drug development, for example, our collaboration with Singapore's cancer drug company AUM Biosciences. Together our MPT0E028 small molecule compound has just completed clinical phase I trials earlier this year – the first initiated by a university in Taiwan. We are primarily concentrated in breast, colon, prostate, and brain cancer. The cancer space is very large, and we cannot work alone to cover the entire disease, so we much chose the areas where we have particular expertise.

In neuroscience, our emphasis is on traumatic brain injury, stroke, vascular dementia, and peripheral neuropathy. This is an extension of the ambitions of TMU's past two former presidents, in fact, our former president Cho who was also the former Minister of Health and Welfare was very dedicated to traumatic brain injury, playing a role to implement the regulation to require helmets for motorbike conductors in Taiwan.

For pulmonary medicine, we are focused on tuberculosis, asthma, and Chronic Obstructive Pulmonary Disease (COPD). TMU has recently published an article in the New England Journal of Medicine regarding multiple drug-resistant TB. Our aim is to establish new treatment guideline to tackle this challenge. Each of our associated hospitals is dedicated to a particular disease in this therapeutic area.

On the side of precision medicine, TMU is in the process of constructing a new proton centre for the development of radiotherapies which will be completed in 2020. This will be the third proton centre in all of Taiwan.

Last April, TMU launched the Taipei Neuroscience Institute. What has this new addition to the university's health network meant for the existing innovation and research capacity of TMU?

Neuroscience has been one of TMU's research areas of excellence for a long time. We have integrated the universities capabilities along with those of our affiliated hospitals in neurology, neurosurgery, neuro rehab, neuroradiology, pediatric neurology, and psychology to establish a comprehensive neurological institute. The Taipei Neuroscience Institute was launched at Shuang Ho Hospital in 2018. It is the first centre of its kind in Taiwan and has over 100 neuro medical practitioners with Professor Yong-Kwang Tu as its first superintendent, the first president of the World Federation of Neurological Societies from Asia. The centre has Asia's first ROSA Spine mechanical robotic surgical assistant for precise navigation in spinal and brain lesion surgeries which will provide patients with the best and most precise minimally invasive neurological surgical services.

What competitive advantages do TMU and its network of hospitals have in attracting clinical trials?

Having three affiliated general hospitals, TMU is very well positioned to be a choice partner for conducting clinical trials. Between the hospitals, we have integrated our resources to establish a joint clinical research centre (JCRC) and joint institutional review board (JIRB). After applying for a singular approval, sponsors have access to all three hospitals to carry out their trial. Moreover, our physicians are very competent in conducting trials and we encourage them to get involved in this activity.

How else is TMU working to generate more industry-academia collaboration – one of the top priorities of the current government administration?

As a private university, TMU is very eager to foster industry-academia collaboration. For example, we have spun off 12 biotech companies specialized in new drug development, molecular diagnosis, medical device, and precision medicine. This is the greatest number of spin-off companies produced by any university in Taiwan.

In biotechnology the cultivation of talent is key to success, however, there can be a disconnect between the mindsets of pure scientific research and business where the two sides can find it hard to "speak the same language". How is TMU bolstering this integration and introducing students to the opportunities of the biotech industry?

TMU’s new college of interdisciplinary studies is the cultivation center to inspire the innovation of Taiwan’s next generation of entrepreneurs. We offer workshops, maker spaces, and other facilities to create an environment where students from all different sides of life sciences and medicine can come together to enter into conversation and share experiences and ideas.

Inspiring these discussions is only the first step – TMU wants its students to bring their ideas into real-world application. Therefore, we execute several workshops and competitions to encourage students to take ideas one step further into execution. For example, our annual TMUxMIT Healthcare Datathon which we partner with Massachusetts Institute of Technology. Additionally, we offer many business courses which allow students to work closely with professors to finetune these concepts. We also support mentorship for students with professors and industry players through our office of Business Development. Not to mention, TMU is collaborating with the Taiwan Biomedical and Medical Materials Translation Value-added Talent Training Program (SPARK) which was started by the Ministry of Science and Technology to facilitate and offer resources for the cultivation of talent and promotion of university-bred startups.

Another focus of ours is to establish a biomedical accelerator program to ensure that these startups can survive and mature. It is not enough to only help form a startup, it must be actively supported, and this is a unique feature that TMU can offer entrepreneurs. Additionally, TMU has a clinical emersion program to send students to work alongside physicals in our associated hospitals and identify unmet medical needs that can lead to new business ventures.

To what extent is TMU involved in cooperating with other academic institutions both at home and on the global stage?

Domestically, we have a strong network of collaborators like Academia Sinica and the National Health Research Institute (NHRI). Two of our PhD programs including cancer biology and drug discovery are in partnership with Academia Sinica. Our PhD programs with NHRI are in neurodegenerative medicine. Both are highly focused on translational medicine.

Internationally, we have many student and faculty members participating in regional joint symposiums and research collaborations. Currently, TMU has over 200 partner universities in over 30 countries around the world. Particularly, our networks in Europe and South East Asia have increased substantially in recent years. We have developed a new drug development alliance with Hokkaido University in Japan, a pulmonary medicine alliance with Imperial College of London, and a translational research alliance with Case Western Reserve University in Ohio. TMU provides seed

funding to support CWRU through a Joint Research Seed Fund, in the past three years we have funded 10 translational research projects. Moving forward, we are looking forward to an even deeper collaborative effort with CWRU in joint research.

Looking forward, what goals do you aim to achieve within your term as TMU's tenth president?

As the tenth president of TMU, I have identified a ten-year long-term plan in the pursuit of becoming a world-class medical university. Currently, we are ranked as number 362 by the QS World University Ranking (521 by Times Higher Education) and number 80 in Asia (64 THE). Domestically, we are ranked among the top five of Taiwan. This ranking is not our goal, just an indicator of where we stand. Our priorities are in joint publications, academic and industry reputation, and student education. Working on these areas will ultimately lead to an increased ranking, of which our goal is top 200. Additionally, we would like to have three fields of research at the world-class level – cancer, neuroscience, and pulmonary. We will also introduce AI integration into these areas. Lastly, we are aiming to double our revenue from TWD 25 billion (USD 800 million) to TWD 50 billion (USD 1.6 billion). Like the ranking, a community effort from all aspects of the university and our hospitals will result in achieving this goal. In translational research, we have a 3B strategy – bench to bedside to business. We will encourage our faculties to participate in innovative research and translate this into the market – ultimately achieving a benchmark of having three listed spinoff companies.

What final message you like to deliver on behalf of TMU to our international readers?

In the years ahead, TMU will work towards becoming a world-class university implemented with a happy enterprise spirit, where the professors and staff can enjoy work and develop their expertise while also providing students with a free and energetic campus atmosphere to realize their dreams. TMU also strives to be an institution where the alumni community can be proud of the alma mater, jointly give back to the university, create TMU's new blueprint, and complete TMU's new vision of "Joy, Hope and Happiness."

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