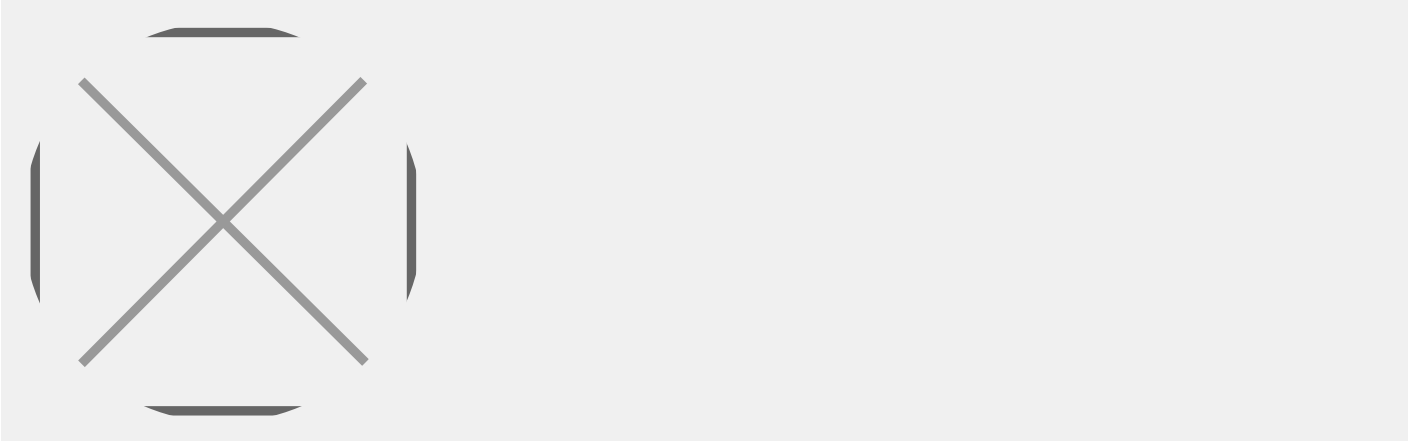
Interview part two: Chang Yi Wang, Chairperson & CEO, UBI Asia, and Chairperson & CSO, UBI



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In the second part of this two-part interview, the Chairperson of UBI and UBI Asia offers her thoughts on the challenges and opportunities of the Chinese market, and explains her own personal history that led her to the creation of the company. To read the first part of this interview, click here.

Would you consider China for Phase III research?

Only if things can be under our full control and the IP can be well respected and protected

Would you nonetheless cite easy access to the Chinese market as one of the drivers behind your presence in Taiwan?

Yes, of course. Proximity to China is certainly one of the reasons we chose Taiwan. After signing the ECFA and medical/clinical collaboration between cross strait, Taiwan has a special position to leverage the early clinical results generated in Taiwan to tap into the late clinical trials and market in China without transferring the technology and setting up local manufacturing.

UBI is talking about a vaccine for Alzheimer's. You're talking about a functional cure for HIV. These are hugely ambitious projects. We have not seen any companies from this region join the global Top 20, despite the fact that it's one of the fastest-growing areas in the world for pharma sales. Can UBI be that company?

We *must* be that company. For the first generation of protein drugs, Amgen holds the top spot. For the first generation of antibody drugs, Genentech is ahead. The third wave of biopharma will be designer vaccines—and UBI will be the global leader. We will also put ourselves on the map in antibodies, of course; we cannot miss that train. But designer vaccines will truly be our shining point. As I said, I've worked for twenty years on this goal, and input a lot of private money toward achieving my dream. Indeed, I have found that private funds and earned corporate revenues from other businesses are sometimes the only way to really move forward in the biotech business, because many investors are weary of the long incubation processes involved.

I should note that the first application for our designer vaccine platform was animal health. Our first animal health product was geared toward combating foot-and-mouth disease (FMD), and the largest market for swine-related FMD is China. Around 2000, China had a significant outbreak of the virus. The Chinese did not announce this problem to the world: rather calling it 'Disease #5.' But domestically, it was a major bio-safety concern.

I came to China with UBI's peptide-based vaccine technology, totally nonbiohazadous and able to match/surpass the viral mutation that could help. Our approach attacked the immunological essence of the virus—it was unnecessary to grow the virus in a BL-3 facility like all other viral vaccines of biohazard risks. The Chinese were very impressed. We brought our platform to Shanghai, and within a few years, we developed a first-in-class animal health designer vaccine. We scaled up from the gram to the kilogram level, utilizing our own instruments and a facility that we set up on the outskirts of the city. Soon, we were able to produce 20 kilograms of the peptide ingredients, or over 300 million doses, per year.

Our technology can address a plethora of swine-related diseases, and also has a range of applications for humans. It is able to neutralize the antibody B-cell site to prevent viral infection, and also has significant implications for T-cell response, diminishing the viral load. We extended the platform to a number of diseases, and have now established an alliance with the fastest-growing global company in the field. We don't have to distribute to the world ourselves: our partners can reach more than 50 major countries.

Financial terms aside, we chose this partner because they have an amazing chief scientific officer, who has commercialized many products in the animal health field. The chemistry between our innovation platform and their registration and marketing capabilities matched up very well. The company is, like us, not yet public, although it is fastest in growth and already ranked amongst the top global players in the animal health companies. We are very happy with the work we've done together for the past year. One of our second-generation products for immunocastration in pigs,

which will compete with a Pfizer vaccine has recently begun evaluation at an FDA review meeting , and demonstrates much better data..

In animal health, we are not focused on the Taiwanese market because it is not large enough. But we do work with Taiwanese scientists: we are currently collaborating with our dedicated colleagues at the Animal Technology Institute of Taiwan (ATIT). We have practically tapped all the pigs and cattle on the island to help us further our platform!

Although we manufacture our animal health portfolio in Shanghai, we are working with a global partner, and a global vision. For our latest products in this field, the global market is first—China is second.

You seem to be quite critical of China.

The market is fantastic, but they have to change the way they do business. China needs to change in the mindset as to highly innovative products. Companies' IP has to be respected. It cannot be stolen or abused. Corruption must be curbed.

What formative experiences would you say have informed your vision for this company?

I believe in innovation, and pushing forward for mankind.

I have been very fortunate to have worked in close contact with four Nobel laureates throughout the course of my career. I know what it means to pursue excellence—to *be* excellent. I learned this from a very young age. In my 20s, I was the first Asian woman to be accepted to Rockefeller University. There, I was taught by Professor Bruce Merrifield, a 1984 Nobel laureate in his dedication to the invention and development of solid phase peptide synthesis and its potential applications. My thesis professor was Henry Kunkel, a pioneer in clinical immunology whose first graduate student, Gerald Edelman, deciphered the structure of antibodies and was a 1972 Nobel laureate. My cellular immunology teacher, Ralph Steinman, went on to become a 2011 Nobel laureate for his discovery of and lifetime work on dendritic cells, a critical element in the generation of an immune response. I also had the good fortune to work closely with James D. Watson, a Nobel laureate for his discovery of the double helix. Dr. Watson was on our board for seven years. There are other pioneers in this biomedical field, Dr. Robert A. Good, a pioneer in cellular engineering and bone marrow transplantation, Dr. Lloyd J. Old, a pioneer in tumor immunology, who also influenced me greatly when I began my research career.

In the early '80s, I was the youngest lab head at Memorial Sloan-Kettering Cancer Center, the largest cancer center in the world. I had the good fortune to work with and mentor a number of

bright young minds —from US, Japan, the Netherlands, Germany, Italy, Israel, and eventually China—many of whom have remained with me throughout these years. I formed United Biomedical in the late 80s to unite these researchers in a company that could help people. The next generation has now joined us.

I experienced the great science of the ‘70s, and the entrepreneurship of the ‘80s. In the ‘90s, while the world still ignored China, I went to China. I watched China move from poverty, to tremendous growth and arrogance to its current tipping point of market correction.

Having worked with many outstanding scientists, mentored many bright young fellows, and having had these entrepreneurial experiences, I would never commit my science to non-meaningful applications. I am now working on my dream, and I am getting close to achieving it. I can’t complain! There are different levels of products in this industry: simple generics are at the lowest level, higher-barrier formulations are at the next level, and high-impact products sit at the top. I like to work on high-impact products. This is my passion, and my life’s work.

Taiwan needs to originate all kinds of innovative products, because today we have *none.* But until we break a barrier, until we bring something revolutionary, no one will notice us. UBI and UBI Asia will be the company that truly puts Taiwan on the map.

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