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UBI first invested in Taiwan in 1998. In 2004, you told investors, "Taiwan is *the* place to establish biopharma firms with international links." 15 years after establishing this subsidiary, and nearly ten years after you made those remarks, has the market continued to offer value to UBI?

It has—and the environment has improved greatly over time.

For instance, on September 9th 2008, the chairman of the Taiwan Stock Exchange visited New York, and asked me to bring UBI to Taiwan for a public offering. From our perspective, the capital market in Taiwan had not been friendly to the biotech industry for the preceding 30 years. There was no chance for any company in our field to take off unless certain rules were changed. We made recommendations to the chairman that the exchange needed to eliminate the requirements of profits as a prerequisite for an initial public offering in order to truly nurture a group of highly innovative companies in this field. Also the need to establish an independent committee to assess the quality of the enterprises meeting the worldclass biotech/pharma industrial standard to allow the few truly worthy of capital market support with NO profit for a long period while they are investing in the highly innovative bio/pharma or technology development process. The investors need to be educated to the fact that it takes a great deal of of funding to invest in innovative drugs, and the biotech business is quite different from the ICT firms Taiwan was accustomed to supporting. ICT companies operate on much shorter-term cycles, and are facility -oriented. Innovative biotech is significantly longer-term, and involves an inventive endeavor.

Furthermore, setting up a screening process to differentiate between truly innovative companies and distributors, or manufacturers etc. to only allow strictly innovative biotechs to receive IPO certification. We expressed to the chairman the necessity to protect the quality of the companies that go public. Once a few low -quality players claiming this privilege are allowed onto a marketplace, that marketplace is doomed.

With the new reforms initiated and implemented by the chairman, the Taiwan biotech market has enjoyed a boom over the past few years. Though UBI, UBI Asia or any of its subsidiaries have yet to undertake an IPO, some of our peers have enjoyed tremendous capital gains. The market is understandably a little bit naïve, but investors are learning quickly, and the market cap growth in this sector has been remarkable to watch.

The gradual change towards innovation proved revolutionary for this country—just as revolutionary as the change I spoke of in the stock market. Since 1998, we have invested tens of millions of USD into Taiwan biopharma R&D activities, because we believe in the Taiwanese people. I always had confidence in them! I saw that they had a deeply entrepreneurial spirit, and that the state put a heavy emphasis on education. Pharma and biopharma innovation, I knew, would be able to take root here eventually.

At UBI Asia, we helped change the ecosystem. From the outset, we insisted on putting R&D as our first priority, and insisted on developing truly heavyweight products in this country. When we first arrived in Taiwan, the environment was quite immature. For instance, the country had no viable platform for the testing of antibody drugs while countries such as the UK and the U.S. were already relatively advanced in this area. Despite the fact that Taiwan was investing in biotech, there seemed to be no cohesive planning. Taiwan had money and knew how to sell, and how to make generics, but they did not have experience in transforming researchers' great

ideas into commercial drugs. , I have not seen any true biopharma products come out of Taiwan as yet, despite the establishment of an institution to bridge academia and industry. I believe this is because the emphasis in the past focused on technology development rather than product. Technology is important—but the ecosystem needs a product focus to elevate technology to the next stage. A platform can deliver a thousand results—but which results? A market cannot build a technology platform without a product. Without a product, you cannot tie the pieces of the puzzle together! UBI's flagship HIV receptor antibody, which was tested rigorously in the U.S. for efficacy in post exposure prophylaxis by offering sterilizing immunity or with precipitous viral load reduction in a treatment mode, was able to act as that catalyst. By utilizing this product, we have built a very solid antibody drug development platform and team . Now, with the platform and team in place, we can create a second innovative antibody, a third innovative antibody, etc. We can also link with government institutions to selectively license in, their lead products and work on commercialization. We worked closely with agencies like the Center for Drug Evaluation (CDE) to obtain Phase I approval for drugs that were first-in -man. CDE had little experience in such matters: in the past, Taiwan was a hub only for Phase IV trials, or bioequivalence studies for generics. Nobody had looked to Taiwan for first-in -man research before us. Today, we can bring a pipeline of antibody drugs through Taiwan—some are already in Phase II, and others will soon get there.

The next stage will be to scale up. We are preparing for Phase III, and commercialization. The government continues to lag behind our progress, but we can help them to reach the same level.

Can you expound a bit further on the contents of your pipeline?

The flagship HIV product I mentioned is an entry inhibitor monoclonal antibody, UB-421. In Phase I of clinical testing, we noticed a significant viral load reduction, and moved to Phase II. We are moving toward a functional cure of HIV—not just treatment. Our drug has the unique property of preventing self-re-entry and cell-to-cell transmission of the virus, and is able to activate the viral reservoir. We believe that, if UB -421 is used in combination with HAART treatment, we may have a real breakthrough for an HIV cure.

For this product, we are working with the U.S. Division of AIDS at NIAID, National Institutes of Health (NIH),the U.S. Food and Drug Administration (FDA) to review the data, and multinational companies on global collaboration. This drug is not a local Taiwan project, or even a Greater China project. From day one, our company has been a global company. For instance, we have always stressed bilingual communication: as we know, no English, no science! We also are able to work around the clock, because as Taipei is going to sleep, New York is waking up, and vice versa. As we say at UBI…."around the clock, around the globe."

Our research, of course, also reflects the higher rigor of U.S. standards. International quality is built into everything we do from the beginning. Our competition is biopharma companies like Amgen and Genentech.

Another of our flagship projects is an epitope based designer vaccine. This is a technology arena I have been working on for two decades. From the outset, I decided that I did not want to deal with classical vaccines—others could build those products better than us. Instead, we chose to work on epitope based peptide vaccines, and to work on areas like Alzheimer's and other diseases or infections where there are great needs beyond what the conventional biological

vaccine approaches can deliver. An Alzheimer disease vaccine targeting Amyloid–beta peptide is the most unique first peptide vaccine one can make.

Coupled with the platform we've built, I think this is another area where we might offer a breakthrough to the market. While we do have competitors in this field, including big Pharma like Novartis, Merck, Pfizer, and others I know we are the best.

For this vaccine, I brought the platform to Taiwan, and have worked with local agencies to allay their concerns about a first-in-man Phase I study. In Phase I, and again in Phase II, the drug proved to be safe, and the open trial data we've accumulated is excellent. We were able to generate site specific anti-amyloid-beta oligomer antibodies in all patients—which is unusual for vaccines. We're talking about a one hundred percent response rate! So far, we have seen an improvement in three out of three functional scores for patients with mild Alzheimer's disease (AD).

When we brought this very challenging product to Taiwan, we were testing not just the capabilities of the CDE but also the capabilities of the investigators in the hospitals, the contract research organizations, and our local clinical science team. As we have moved along the process both in HIV infection and Alzheimer's disease, we have not been disappointed. The data we have generated in Taiwan has impressed our collaborators in the West. We recently had a conference call with the FDA regarding our Phase II planning for the AD product, and they came away quite impressed.

It is not easy to conduct a Phase II study for an Alzheimer's vaccine which requires a PET enabled image biomarker for diagnosis of early stage of Alzheimer Disease, but Taiwan is now the only country outside U.S. that can do it. This says a lot about the quality of Taiwan's clinical capability. No one should underestimate Taiwan in clinical development. We only need a good product to bring that potential to fruition!

Would you consider China for Phase III research?

Only if things can be under our full control and the Intellectual Property 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 among one of the reasons we chose Taiwan. Especially, 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.

To return to your pipeline again for a moment—you're talking about a vaccine for Alzheimer's disease. You're talking about a functional cure for HIV. These are hugely ambitious projects.

That's right. Very few people have the patience or the money to push forward in these fields. I don't think any other company in Taiwan has the resolve to do that.

That's right—most of the talk in Taiwan seems to circulate around the development of 'me-better' products. Incremental innovation, rather than first-in -man drugs or biopharma products. We also 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 non-biohazadous 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 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 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 years. One of our second-generation vaccine products for immunological castration 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 only 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 th e mindset as to highly innovative products . A 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 with and 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 the Rockefeller University in New York City. 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 the 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 the U.S., 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 1980's 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 1970's, and the entrepreneurship of the '1980's. In the 1990's, 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.