Interview with Ko-Chung Lin, Founder and CEO, PharmaEssentia

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When you created PharmaEssentia, what was the rationale behind coming back to Taiwan?

The foundation for the company was laid in 1997. A group of Taiwanese government officials came to visit the Boston area at that time, and I helped to arrange them to visit a few biotech companies, and through talking to them understood that Taiwan was interested in pursuing biotech development as one of the major goals for the country's economic growth. At that time my team and I had very little contact with the Taiwanese government, so after realizing that they really wanted me to help, I talked to a few people in the US about the Taiwanese government's promotion of the biotech industry. In 1998, a group from the US including myself came back to Taiwan to visit. We had a few meetings with government ministers, and quickly realised that we could do something to help the country achieve its goals.

How did you feel at that time? Did you feel like you had a responsibility to come back to Taiwan?

As you know, in the western environment you are open to a lot of information. In my mind, the story of AstraZeneca was particularly striking: you can start a very small company and grow it to play a major role in a thirty-year time frame. Taiwan is capable of creating such a company, and it is our responsibility to try and make this happen. One of the key members of PharmaEssentia's team is Fu-Kun Lin, Ph.D. one of Amgen's very first employees, and credited as the discoverer of EPO. EPO's total revenue today is over U$ 10 billion a year. It's a huge product and has been very

successful, and has really improved the quality of life of anaemia patients. It's a great contribution. It was Amgen's success that made people realise that biotech was a promising industry. Fu-Kun Lin was the key to this success. His view on the Taiwanese situation at the time was that making money should not be our immediate goal: rather it should be to take care of the people and the country.

So based on this philosophy, how did you build the business model for PharmaEssentia? What was it that you wanted to set up when you came to Taiwan?

We determined how to best capitalise on Taiwan's industrial history. Taiwanese investors were used to seeing results in three to five years, as in the IT and manufacturing industries. Biotech is a totally different business. So we formed a team and decided to proceed slightly differently in terms of strategy. Our slogan is 'better science, better lives.' This is what we do.

There are two areas of medicine: biological and chemical. Major pharmaceutical companies have traditionally been more involved in chemistry and on the other hand, biotech companies more involved in biology, but the line is blurred today. Seven years ago we thought we would aim for this combination of biology and chemistry. When we had the idea it wasn't too popular: protein and chemistry were totally different camps. I had been working for Biogen. The CEO thought at the time that the company needed to do some chemistry too, so the reason I joined the company was because he wanted to build on this idea. Therefore, I had great experience at the company to learn protein and to do chemistry.

You mentioned the attitude of shareholders to biotech in Taiwan. We've heard that whilst around the year 2000 these shareholders were very enthusiastic, but that today the situation is slightly different. PharmaEssentia has done three funding rounds. How has the attitude to the company changed from that first funding round to the latest one?

I wouldn't say that 2000 was the high point of investor interest based on my own experience. Among the private sector, this interest is still there. The government is still trying to work out the best way to foster the development of the biotech industry, but I see their work as having made tremendous progress. I worked in the United States for over 25 years: it is much slower there than here in Taiwan. Taiwan is so open; progress is tremendous and the reason is because of education. People love to study here. The difficulty with the government is that they change people so quickly that there is a bit of discontinuity for long-term planning or strategy, which is unfortunate. However, in the private sector today in Taiwan I believe that interest in biotech is still growing. This is very positive: there is money out there and many people with good ideas who want to

contribute.

We have heard from companies with shareholders who are outside the life sciences sector that initially they were very keen to invest because they thought biotech was going to be the Taiwan's next key industry, but because of the cooking times a lot of companies have suffered because their shareholders lost interest.

I agree with your observation but people are encouraged by the government's incentive program which was written in the law and was passed through Legislature Yen three years ago. People are more willing to invest into biotech now and our company is a good example of that result.

PharmaEssentia has a very smart business model: you have a balance between the value-driving and the revenue-driving projects. What inspired you to seek this balance?

We have to give credit to the government for this: they provided a lot of information for us before we began to formulate PharmaEssentia's business model. PharmaEssentia is not purely a biotech company. We took the big pharma model and mixed in the biotech spirit.

Taiwan is very good at manufacturing and selling products to the world. We realised Taiwan could help us manufacture and so we created a short-term plan to bring in new technologies and processes, patent them and make money from production. This was the revenue-driving part of our business plan. However, the plan was not too successful, as we overestimated Taiwan's experience and capabilities in pharmaceutical manufacturing. It does require a different approach, from that of most manufacturing companies in Taiwan, because there are very different skills andexpertise required, especially from the regulatory point of view. The pharmaceutical sector in general is a more closely regulated business. It takes a lot of manpower and experienced people to comply with these regulations. Taiwan had insufficient skill in this at the time. However, the situation today has completely changed.

How do you think you have taken the strengths of Taiwan and used them to build your company?

We have two groups of people at PharmaEssentia: old men like myself, and then the young and well educated people that work in the labs. They read papers and do research by themselves very well. All the old men need to do are to provide instruction and guidance. This is how we have been successful in filing INDs with the US FDA. These young people did much of the work. Taiwan's main strength is its manpower: people are well trained in the biosciences here in Taiwan.

Do you think these people have the same business minds that your generation has? You went and worked for an American company. You learned the western style of business and now you have

come back to Taiwan and taken the best of both worlds in creating your company. Will the next generation be able to do it?

I came to understand that the reason that many people today do not go abroad to do PhDs is very simple. The most respected professors in major universities in the US, were once the classmates of Taiwan's current professors. These academics are in many ways working at the same levels and have accomplished the same things. So students here don't need to leave the country because they get the same quality of teaching and the same good projects to work on. However, I totally agree with you: if these students don't get the same experience as us from working in American companies they will not be as diverse in their thinking and decision making. That's why people like us needed to come back and mix it together.

How do you attract these young professionals to come and work for PharmaEssentia?

In the beginning the company had trouble recruiting people. I had the same experience when at Biogen. Biogen is based in Cambridge, MA, so we used to go out to Harvard or MIT to interview people, but at the time we had difficulty to attract them because it was so small. Nowadays everyone wants to work there. In just 20 years this has changed. In 20 years, Taiwan will do even better I guess. In just seven years, people are applying for jobs with PharmaEssentia.

So it seems like you have a very long-term vision not just for your company, but for the future development of the industry. What are your personal goals over the next few years?

I want to see a product from Taiwan become a global product to benefit patients globally. I would really like to see a medicine reach the global market that was invented here. However, we do not just focus on the product only: we are building up a value chain in Taiwan so that these products will come on their own. In 30 to 50 years from now PharmaEssentia could be huge.

How do you see the growth happening in the next few years? Are you just waiting to find the right product to take to market, or are you going to diversify your portfolio?

As of this year we have five big products in the pipeline. These molecules are very big in terms of revenue on the market right now, namely alpha-interferon, beta-interferon, EPO, rh-GH and GCSF. Every one is a billion dollar molecule itself.

Chemical medicines have around 400-500 years of history. Every drug is so well-developed that there is not much that can be done to improve it. If you want to improve it you have to take the 'me-too' approach, and make better compounds. That will take an army to do that and we know we cannot compete with big pharma at this, so that is why PharmaEssentia is focusing on the

improving protein drugs. Most of these drugs are from the early biotech companies like Amgen and Biogen: when they develop these products they leave a lot of room to improve. In addition to this, the history of protein drugs is less than 40 years old. PharmaEssentia's first product (P1101) achieved what we set out to do, and is in clinical development right now. Our goal in the next few years is not only to license it to big pharma; we would like to put the compound on the market. Where are we going to go? China. We are going to put three of the big five into the market to really generate the cash.

P1101 is actually a third generation alpha-interferon product. The first generation alpha-interferon is for treating Hepatitis C. An estimated 300 million people worldwide are infected with hepatitis C and 40% of these people carry the virus, which can end in cirrhosis and liver cancer. The three times a week regimen of Alpha-interferon does not just deal with the symptoms, but can cure the disease. However, the first generation drug only had a 30% response rate. Later, more research was done, and the second generation of the drug was developed: Pegasys by Roche and Pegintron by Schering Plough are dosed once weekly, a big improvement in efficacy and patient's compliance. Revenues are about U$ 2.6 billion annually for these two drugs. Their cure rate is almost 50-70% when taken together with Ribavirin, which is a big improvement but still not perfect.

Our compound is third generation aiming at a biweekly regimen. There is a front-runner called Albuferon from Novartis that showed a biweekly superiority in clinical setting. The design of the molecule was based on a very clever idea: to combine albumin and interferon. This idea was initiated more than 20 years ago. Ten years after it went to human trial. Novartis saw this as a good opportunity to dominate the market because of its improved biweekly regime over the second generation drugs, Pegasys and Peginterferon.

Our compound is more a modification of the second generation, Peg-alpha-interferon. When we looked at it, and we spent a long time studying, Pegintron has a once a week dosing regimen but is not very pure, with more than 14 positional isomers. Pegasys was an improvement, and is the market leader. Still, it has also a once a week dosing regimen. We believe we can do better. The best you can do is a predominate single form, so we made it. There is a lot of technology coming together to make it happen. We believed that a predominate single form could lead to 2-4 week dosing regimen, and we have proved that in animal studies.

We documented this information and submitted it to the US FDA, which looks at two things: safety and efficacy of new drugs. They approved us to do one single injection and then draw blood for 30 days. They are convinced that dosing could happen once two weeks to a month. We believe that

we can now apply the same technology platform to the other four products in PharmaEssentia’s pipeline.

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