Interview: Chen Min-Che – Founder & Managing Director, Asclepiumm, Taiwan



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Chen Min-Che, founder and managing director of Asclepiumm, provides insights into the main milestones reached and the new partnership opportunities considered by this exciting biotech company, whose Antibody Switch-on Cytotoxicity (ASC) technology platform could contribute to bringing onto the global market a novel class of "smart cell-penetrating proteins" in multiple and critical therapeutic areas, encompassing oncology, anti-aging therapies, and tissue-specific hormonal products.

You founded Asclepiumm Taiwan in 2011. What prompted you to set up your own biotech company?

The story of Asclepiumm is closely linked to my personal background. My mother died of cancer so I wanted to focus my Ph.D. work on cancer metastasis. Therefore, I started my research at the University of Manchester and discovered a new function of one of the main cell-cell adhesion molecules – desmosomes in EMT (epithelial-mesenchymal transition, which is a critical mechanism of metastasis and fibrosis). However, my research supervisor at this time was not really eager to see me further investigating the potential of this promising findings. Soon after receiving this disappointing feedback, I was offered the opportunity to pursue my research at the Manchester Metropolitan University, where I ultimately completed my doctoral and post-doctoral studies.
As part of my doctoral and post-doctoral research, I developed the antibody and peptide antagonists to EMT and decided to found Asclepiumm, in 2009, in Manchester in order to fully

leverage the therapeutic potential of this new technology and work on the development of new drugs. After I transferred the patent rights for this EMT technology in England to Asclepiumm, I come back to Taiwan and rely on the financial support of my family and friends to finally start the Asclepiumm Taiwan company in 2011, in Taiwan.

Since its conception, I have deeply believed that this novel EMT antagonist holds the potential to bring groundbreaking treatments to international patients, and my first and foremost objective has been to ensure I can now turn this vision into reality. All the struggles I went through did not affect my confidence or my ambitions, and I would not have been able to face these challenges if I was not utterly convinced I hold a potentially game-changing technology.

Asclepiumm's team now holds seven employees overall, including 4 Ph.D. holders, and we are concentrating our efforts on two main therapeutic areas: ophthalmologic diseases and oncology, holding one product in each of these two fields that has already demonstrated its efficacy through successful animal studies.

How would you rate your experience so far when it comes to setting up and developing a new biotech company in Taiwan?

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Although Asclepiumm's beginnings were rather chaotic, coming back to Taiwan undoubtedly was the right decision. First, Taiwan is one of the world's most advanced countries in computer sciences with great strengths in big data management and a plethora of studies conducted in the genetics and proteomics fields – providing companies like Asclepiumm with an unrivalled competitive advantage when it comes to developing personalized medicines. Moreover, the quality of our local healthcare system, the NHIA, and Taiwan's medical and research capacities in general, make it the perfect place to conduct early-stage drug development while leveraging data gathered by the NHIA and Taiwan's world-class hospitals to continuously improve our treatments.

Second, I received a great support since I came back from England. Reputed professors and research supervisors from National Taiwan University, Tsing Hua University and Academia Sinica have been extremely welcoming and supportive, and we often brainstorm together to see how we could ramp up and better tailor Asclepiumm's research efforts. For example, Dr. Chang Tse-Wen, an internationally recognized leader in the biotech and antibody fields who recently retired from Academia Sinica, strongly advised me to protect the innovative ideas by filing patents carefully in the first place and he is closely helping our researchers.

Considering our limited resources, our development rate has so far been rather steady. We conducted a first round of funding in 2013, which provided us with the capacity to hire three more employees and move to Mackay Memorial Hospital's incubation center. This incubation center, integrated within one of Taiwan's best medical centers, indisputably stands as great place to

conduct groundbreaking research, as we can access a comprehensive animal testing capacity for our preclinical studies and discuss our results with key researchers and physicians in the meantime. One of them, Dr. Yeh Hung-I, for example advised us to test our anti-angiogenesis peptide molecule for treating age-related macular degeneration (AMD, a common aging eye condition), while initially it only targeted cancer in our study. The supervisor of the incubation center, Dr. Chen Yu-Jen is also a recognized specialist in radiotherapy and we have been closely cooperating with him throughout the development of our compounds. Overall, this unique working environment gathering both reputed academics and world-class practitioners is extremely beneficial to the development of the company.

What is the current R&D focus of Asclepiumm?

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At the moment we concentrate our efforts on the development of our new peptide molecule which will notably be used for the treatment of wet-AMD. Currently, all existing treatments in this area are injectable products. Nevertheless, we believe that our peptide, which is smaller than these products' molecules, could be used in topical medication – and this would be a major breakthrough. In addition to wet-AMD, we identified that this peptide molecule could also be used to block retinal fibrosis. After having gathered convincing animal studies results, we now hope to complete in 2017 another round of financing and start the clinical development of our first product in 2018-2019. Overall, we plan to complete the phase II-a clinical trial of this product within the next three years. Finally, as the production of peptides is also much cheaper than for existing treatments and the AMD market amounts to more than USD 8billion globally, this product definitely holds eye-catching market potential.

In the meantime, we are also working on improving our proprietary platform technology, the Antibody Switch-on Cytotoxicity (ASC) platform, which comprises a very innovative way to block or control intracellular signals. To put it bluntly, this technology operates as an ASC shuttle that brings antibodies and peptides directly to targeted cells. As most existing effector molecule are cell-penetrating peptides, they are integrated with cell signaling regulation peptide functions after reaching their targets, while we found out during our animal studies that our technology platform enhanced effectors to reach the cells' nucleus and operate at the gene level.

As this ASC technology could allow us to control gene expression and protein interaction, we now want to develop our research capacity with the ambitions to develop ASC bio-drugs in areas such as oncology, anti-aging therapies, and tissue-specific hormones therapies. We, for example, identified the opportunity to develop ground- breaking treatments which could turn white adipose tissue into brown adipose tissue or also stimulate anti-aging factors within the cells' nucleus to slow down cells' aging. Nevertheless, substantial research challenges still lie ahead of us and we do

not plan to start working on the clinical development of these therapies before 2020.

As you have a candidate drug which has already proven its efficacy, are you already looking for partners to develop it further?

Our strategy is either to do early-stage licensing or to build a corporate development partnership. Either will bring more resources to our company, which could then be leveraged to nurture our other research endeavors and further develop our ASC platform. In the grand scheme of things, we plan to out-license the first wet-AMD product for which we got strong early stage data and use related incomes to develop more ASC platform candidate drugs. As part of these upcoming licensing agreements, we consider sharing the rights of our products for some specific markets, namely China, Taiwan, and Japan – while completely selling them off to our partners for other international markets such as the US and the EU.

In this regard, we are very pleased to announce that our ground-breaking products have already drawn the attention of international partners for these markets, as we are currently discussing the terms of early-stage development partnerships with global pharmaceutical companies.

When it comes to financing these upcoming next steps, we do not exclude either the opportunity to look for corporate investors – possibly holding a CRO or CMO background – that would be ready to enter in our company's capital, as it would greatly help us to move forward on all our exciting projects. As our drug has already proven being efficient and safe through animal studies, we now need help to advance its development and manufacturing, which are not our main area of expertise.

Our philosophy relates more to access smart, product development-oriented investments through development collaborations and financial partnerships with companies holding complementary expertise.

What is your strategic vision for the long-term development of the company?

The long-term vision is to establish Asclepiumm as a world-class design center for smart protein and peptide drugs, where scientists can leverage our ASC platform to combine their research and turn it into marketable products and ultimately meet patients' needs, as existing drugs are far from being satisfactory.

Asclepiumm is a company committed to the development of smart peptide drugs or smart cell-penetrating proteins, holding a greater targeting power and displaying lower side effects. In the meantime, as we are working on a very frontier area where treatments can potentially alter gene expression and protein interaction, our drug development choices must embrace the most stringent patient-centric approach.

Overall, we already know that our unique ASC technology platform can be used in various therapeutic areas – and this is probably one of its most exciting aspects. By holding such an asset,

we can envision to go beyond the development of new drugs and truly bring a novel class of life-changing therapies to patients.

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