Tony Chung – CEO & Co-Founder, Instant NanoBiosensors, Taiwan



With the trend of precision medicine growing, innovative devices are needed to help monitor patients

26.08.2019

Tags: Taiwan, Medtech, Diagnostics, Instant Nano

Tony Chung, CEO of Instant NanoBiosensors explains the potential of their fibre-optic biosensor technology – FOPPR, and the commercialization strategy for their light-sensing biomarker analyzer INB-D200. He also highlights Taiwan's strengths in developing value-added biomedical technology.

Can you briefly introduce yourself and the company?

I worked in the biotech industry for 20 years and set up two successful companies which I sold my shares to build a third one – Instant NanoBiosensors, Inc. Our core technology, fibre optic particle plasmon resonance (FOPPR), was developed by Dr Lai-Kwan Chau, former Dean of the College of Science and Dr Wang, Shau-Chun, Director of the Center for Nano Bio-detection at National Chung Cheng University. We have around 30 patents, split into six families and distributed in the UK, the US, China, and Taiwan. Additionally, we applied for two more patents this year. FOPPR technology uses the optical fibres we use every day but coated with nanomaterials to become a biosensor.

How does the use of nanotechnology differentiate Instant Nano from other diagnostic devices on the market?

Our core technology can enhance the detection sensitivity of devices which allows our products to gather data comparable to top diagnostic laboratories. These labs use very big machines with internal lasers, that have very good sensitivity and performance. However, our machines are equally or more efficient with a much smaller benchtop size, meaning they are very portable and can be easily carried to a clinic or central lab, or even be used at home. This is much easier for diagnosing and monitoring patients after drug treatments, which is why several big pharma companies are interested in working with us.

Sales for Instant Nano's INB-D200 biosensor system and chip were all launched in May 2019 and your latest POC model is scheduled to be introduced into the market in Q1 2020. Can you walk us through your commercialization strategy?

Instant NanoBiosensors' strategy is to set up a global distributors network. We are signing contracts in China, Japan, Korea, France, Switzerland, Canada, and planning to attend Medica 2019 in Dusseldorf, Germany in November. We are aiming to distribute our products into ten more countries next year and plan to hold a global distributor meeting in Q3 2020. We have also developed a B2B strategy as an OEM/ODM potential cooperation for our technology and signed NDAs with listed companies in the US and Asia. Finally, I wish to see our cutting-edge platform and products become the top choice of scientists. We are currently working with five hospitals to increase our amount of clinical publications and build a reputation.

Currently, the company is focused on detection programs for common senior diseases like degenerative knee arthritis and cardiovascular. What possibilities exist to diversify Instant Nano's therapeutic range?

As a new company, we needed to prove our technology and capabilities, so we have worked with doctors and done many clinical trials and clinical publications, especially in auto-immune, inflammation, cardio-vascular and sepsis. We are working on the clinical cooperation in the field of oncology, neurodegenerative disease and renal disease. During these clinical experiences, we found some unmet needs and a niche market that other POC testing device companies cannot approach. We can do antibody-drug companion diagnosis and assess disease status during and after drug treatments, which allows us to work with big pharma companies.

A report from PwC estimates that the global cost of healthcare will grow by approximately six percent in 2019 alone. By combining ICT, precision medicine, and early diagnostics, how can start-ups like Instant Nano play a role in reducing the burden caused by an ageing population and the rise of chronic disease?

Our technology combines fibre optics, microfluidics, AI and nanotechnology. It provides instant, simple and accurate measurements, which reduces costs by increasing efficiency and shortening the time to outcome. Conventional manual process takes three to five hours, which is a long time for nurses, doctors, and patients. Some of the automatic machines are faster but cannot reduce the slow steps of the process, so it still takes one to three hours, while our light-sensing technology gives results within five to fifteen minutes, and still keep wide linear range (~five orders), ultra-sensitivity (~fg/ml) and high specificity (analyte with double confirm), thus our technology can complete on-site detection to assist the medical personnel in speeding up their diagnosis and make timely medical decisions to avoid missing out on the best timing for treating the patients and damage and waste of medical resources.

Considering Instant Nano is using both ICT and nanotechnologies, two strengths of Taiwan, what are the benefits of being a Taiwanese diagnostics device company?

We use Taiwan’s strengths and ecosystem to build our mobile-size devices; we have an internal R&D team and collaborate with the ICT sector, designers, and mechanical engineers. Taiwan offers many opportunities; we have both high human resources and cost performance. Even though manufacturing costs are much lower in Vietnam or China, their quality simply does not compare to that of Taiwan. Furthermore, Taiwan has a good clinical trial environment with a very comprehensive and reliable National Health Insurance (NHI) database. Our very unique market size combined with strong transportation infrastructure, such as the high-speed railway, is also an advantage as it allows me to meet many key opinion leaders all around the country in the same day. It is convenient to work altogether.

For all these reasons, I think this is the right timing for the biomedical technology industry in Taiwan. In fact, many ICT companies want to extend their business and open biomedical departments in order to create higher-value products and increase their profits.

This year Instant Nano has been selected as one of four start-ups to participate in the H. Spectrum & Merck Innovation Lab. How will this help to further Instant Nano's development?

Even though we have advanced technology, there are not many chances to work with big pharma companies in Taiwan, so this program is a great opportunity for us. With the trend of precision medicine growing, innovative devices are needed to help monitor patients. Our unique and cutting-edge technology is very user-friendly and does not require technicians to operate. Within five years, no one in the world will be able to achieve the same. This acceleration program will help us out-license our technology and combine our products with the pharma industry.

What strategic objectives are you aiming to achieve in the upcoming 5 years?

Our first upcoming achievement will be to have many scientists use our light-sensing technology for clinical research. Then we work closely with key pharma companies and become the first brand of companion diagnostic devices.

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