Winnie Lun and Patrick Leung, eNano Health, Hong Kong



"The Kiss and Tell Glucose Meter is something simple yet innovative that meets a very genuine health management need."

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Winnie Lun and Dr. Patrick Leung, CEO and CSO of eNano Health, shares the serendipitous story of how they came to establish eNano Health in Hong Kong in 2010; their first flagship product, the Kiss and Tell Glucose Meter, and their expansion into other diagnostic areas; as well as their priorities for further market expansion and growth over the next few years.

Patrick and Winnie, could you share with our international audience the story of how you established eNano Health in Hong Kong in 2010?

We were both previously working in the US and we tried to establish a Bio Lab and a Nano Lab in the US but it was extremely difficult to find exactly the right environment. For instance, I had approached the University of California Los Angeles (UCLA) but was turned away because I was not an alumni. To establish your own lab would have required a significant amount of funding, so we looked around for alternatives.

We are both originally from Hong Kong but had studied and subsequently worked in California for many years. On a visit to Hong Kong, a serendipitous wrong turn led us to the Hong Kong Science and Technology Parks (HKSTP), and we discovered the wonderful ecosystem here for start-up companies. Even more importantly, the university based here, the Hong Kong University of Science and Technology (HKUST), was open to letting us use their nanofabrication lab, which had the particular specialist equipment we needed. In addition, HKSTP also provided some funding to start.

Thus, eNano Health was born.

Now eNano Health has a portfolio of four products, beginning with the Kiss and Tell Glucose Meter. Can you tell us more about your first product?

This was another stroke of fate! As I mentioned, our research project required very specialist equipment that was only available within HKUST in Hong Kong. An unforeseen laboratory incident made that equipment unavailable for us for almost a year. This made it impossible for us to continue working on that initial project, and while I tried to move our project to another lab elsewhere, one condition of the funding I received in Hong Kong was that I conducted my research project in Hong Kong.

Therefore, we had to adapt. We decided to design another, much simpler, product – which became the Kiss and Tell Glucose Meter. I am very proud of this first product because it is something simple yet innovative that meets a very genuine health management need. While in the US, I had a conversation with a doctor that told us about his trouble measuring the glucose levels of elderly people, because the conventional finger-prick method of drawing blood was very painful for the elderly. That inspired me to think, could a simpler and painless method be invented? Our initial project had something to do with nanotechnology but the unexpected incident forced me to think simpler: what if instead of using a high-tech nano sensor, I used a piece of paper instead?

I invented the strip tester that we now have, and first tested it on the elderly people at community health clinics. The reception was great! Many of the elderly confessed that they do not like to use the finger prick method. It was too painful and the prick was too small for them to see. Bearing in mind that Hong Kong has now surpassed Japan as the country with the most elderly people, this is a very important medical need and it became clear to me that the conventional method was in fact not very effective!

After the initial success in Hong Kong, we decided to test it in larger and more low-cost markets in Africa and India. This was also partly because we wanted to obtain clearer data. In Hong Kong, if someone is diabetic, it is highly likely that he is already on the right medication, so his glucose levels should not be that high to begin with. However, in less developed markets in Africa, very often people are not receiving any treatment so we were able to obtain clearer data of the glucose levels of untreated diabetics. In doing so, we were also able to test the commercial appeal of our product, because we wanted to find a solution that was low-cost enough to appeal to less developed markets.

What about the other products within your portfolio? How do they complement the Kiss & Tell Glucose Meter?

This is another interesting story! As we collected more data, we realized something interesting. A few users tested very high in blood glucose levels, but our saliva glucose testing strip showed a negative response. I questioned some of the users, and they said they had a light breakfast and then did some exercise that morning before taking the blood and saliva glucose test. They also mentioned that their blood glucose levels often dropped after taking some food.

After considering, I realized that while saliva glucose reflects blood glucose levels because glucose is the fuel for the body and needs to be absorbed to the cells, the phenomenon of high blood glucose and very low saliva glucose shows the glucose are not getting into the cells from blood. When the patient ate and saw her glucose levels dropped, it was because the eating stimulated insulin production, and that enabled the glucose to enter the cells.

We realized that in order to really understand a glucose disorder condition, we need to understand the glucose outside (in blood) and inside (e.g. in saliva) as well as to understand the insulin levels (the agent that takes the glucose from blood to cells. We had to come up with a product to easily test for insulin levels, in order to provide a more complete picture. This is how we came up with the P4 test – our second product in our portfolio.

This product is very important because it tests your insulin levels, which is an indicator of future issues. When your body starts becoming diabetic, your body starts compensating for the high glucose condition by producing more insulin. This is a precursor to developing diabetes, but at this stage, you can still improve your condition with diet and exercise. This is why it is very important to also test insulin levels because it gives you a chance of finding out your condition earlier!

One marker does not tell you the whole story about your condition. This is why we are developing this multi-dimensional look into a disease, and we actually encapsulate this within the product name – the P4 stands for the four ‘P’s: participate, personalized, predict and prevent!

We have heard that Hong Kong companies are very strong in R&D and innovation but less so in terms of commercialization and marketing. How do you plan to commercialize your products to allow them to reach more users?

We are already selling Kiss and Tell through distributors and pharmacy chains in Hong Kong and

exploring other distribution channels like online for our other products. We also hope to expand very soon into the mainland China and US markets.

In terms of commercialization, we have also developed new offerings with our P4 technology, which we quickly realized could be used to measure many more things, including drug adherence, stroke, heart disease, pregnancy health and stress, to name just a few. We are also working on the nano technology from before, because telecommunications technology has advanced over the past few years that we are now able to do exactly what we wanted to do a few years ago. We are developing an electronic sensor that can provide results in a matter of minutes directly to the users' phones called the eNano BIO SENSOR. This could be great for rapid screening in densely populated areas to test for infectious diseases.

Finally, we are also moving towards offering solutions. When patients use our tests and discover that they are at risk of certain conditions, what can they do? Doctors may not necessarily treat them because they do not exhibit symptoms yet. The solution is in natural foods. Nature already has many solutions to the health problems that we face, so we have developed tests for food to determine their nutritional and safety profile, and we then package them into a drug format that can be easily taken. This gives consumers confidence that they are taking something conductive to their health and in the right amounts, because too much of a good thing can also be harmful!

eNano Health has seen great growth over the past few years. What are your priorities for the next few?

Our mentality is very commercial. We recognized that our strength is with the R&D side so we look for commercial partners to take our technology into different markets. We are very open to working with different entities globally.

Our strength is in technology. We believe we offer great domain knowledge, very robust research and flexibility in collaboration to potential partners, whether they are other biotech companies, multinationals looking for clinical applications, distributors or healthcare institutions. We also have a strong backend database as we are collecting a lot of data, so that can drive strong data analytics and AI development. The technology engine behind our work is very flexible and user-friendly, so we can adapt it to different applications very easily.

For this reason, we hope to establish strong relationships with potential partners that have strengths and offerings complementary to ours, so that we can leverage on their networking and marketing presence to take our technology to the patients and people that really need them.

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