

Interview: Dr. Steven Fang - Executive Director, InvitroCue, Singapore



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Biotech CRO InvitroCue Executive director Dr. Steven Fang explains how their technology has disrupted the current clinical trials landscape and the importance of leveraging innovative technologies in meeting future healthcare needs.

Could you please introduce to our international readers the main activities of InvitroCue as well as the milestones since its foundation in 2012?

InvitroCue was founded in early 2013 and it is a spin out technology company from A*Star. Professor Henry Yu, partner and co-founder of InvitroCue, is the one who developed such technology and I was the one who provided the initial funding to start running our operations. In January 2016 we listed InvitroCue on the Australian Securities Exchange (ASX) in order to strengthen our financials and continue with our business.

The company has two different business lines: cell-based and image-based modeling. The first business line is about using live human cells to conduct lab or in-vitro based testing. The other arm of our business is in the digital pathology area bringing a very innovative technology solution to ease pathology lab analysis remotely.

Professor Yu worked in A*Star and in MIT conducting research to find new ways of creating cell-based model analysis in the lab in order to get more data points about a particular drug or device before launching them into full human clinical trials.

In this regard, we have been one of the first companies to grow human liver cells that can be functional in the labs for two months and enable pharma and medtech companies to run quick and cost efficient trials in order to identify in which drugs they should continue investing, effectively reducing their risk of failure. We currently have pharmaceutical MNCs using our services such as Novartis and Mundipharma.

Currently we are highly focused on liver cells model because there is a huge demand in this area but, at some point, we will replicate this model for other organ cells such as lung or heart through our patented technology.

During the last few months, we have also been developing next generation call based clinical service called onco-PDO, which is essentially using the same technology to grow patient's cancer cells, which have been taken from lab biopsies to conduct a battery of approved or experimental drug tests.

How can stakeholders across the value chain benefit from such services?

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Starting with patients, they will get better clinical and treatment outcomes and, as a result, better quality of life. From healthcare system or payers' point of view, you are reducing the costs that they will have to incur to treat patients. The benefits for clinicians are based on having a better tool to guide their clinical strategy, tailoring the treatment to patient's need and getting quicker results from the tests. Biomedical companies serve to benefit as well, since they can use the lab data that we collect to improving their research initiatives in terms of clinical trials management and drugs efficacy.

Today, we have introduced our Oncology-PDO service in Singapore, Australia, China, UK and India.

What items are currently at the top of your agenda as executive director?

My top priority is really to identify the best way to deploy our technology creating benefits for the society and ensuring sustainable business, which translates into: market strategy, partnerships (both joint venture and scientific collaborations), and investment decisions. We are a fast growing company and during the last two years, InvitroCue has experienced double-digit growth on a yearly basis.

As a Singaporean born and raised biotech CRO, what is the rationale behind listing the company on the Australian Securities Exchange (ASX)?

I have had experiences that involved directly with 4 IPOs process over a decade and one of my other businesses is to help companies list on stock markets or undergo M&A. The decision of listing your company on one stock market or other is quite strategic; in this case, I decided to list InvitroCue on ASX because it is extremely good for early stage founding companies. In order to finance our growth, we need to access a stock market that understands high risk and high returns. We will consider in the future other stock markets such as the Singaporean one but it will depend on the company's performance and shareholders' interests.

What is the current contribution of each business line and where do you foresee more potential?

Currently majority of our revenues come from our cell-based business line, with the remainder attributed to digital pathology. Nevertheless, there is huge potential behind digital pathology and I expect that structure to become a more even split in the mid-term.

Why do you expect such potential in digital pathology?

It is a great solution for developing countries such as China and India where healthcare access is a challenge. Digital pathology offers a cheap, fast and accurate solution, based on scalable artificial intelligence technology.

Digital pathology technology came out from our cell based model business line because we needed a way to track our lab data. Therefore, we developed the technology and we transformed a tool into a new business for the company, while complementing the selling cycle of our cell-base modeling business.

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Are there any synergies that you can derive from these two seemingly different business lines?

The main synergy relies on the need of using digital analytics on our cell-based business line. Indeed, digital pathology has a crucial role in our Oncology-PDO service because we leverage on our digital pathology technology to speed up this service, obtain cells analysis results quickly and to enable remote tele-pathology.

Nevertheless, my business philosophy has always been that each business line has to be able to stand by itself and, once achieved, the synergistic outcomes become clearer. In this case, it is not an easy job since digital pathology was born from the cell based business line; nevertheless, it

aligns quite well with our Oncology-PDO service.

What is your action plan to ensure the sustainability of both business lines?

Both business lines are managed by two different teams with its own P&L, resourcing, and strategy, while simultaneously sharing the company's common goals. In my opinion, having two separate structures enable them to build up their own partnerships as well as to operate with more flexibility. The challenge behind such structure is to find the synergies and take advantage of them. Nevertheless, during our management meetings we never discuss about one business line solely; indeed, we debate about both business lines and how we can improve their operations through synergies and investments.

How pivotal have government agencies such as SPRING and A*STAR in the company's development?

They've been instrumental in our growth, providing financial and non-financial support such as research grants and business opportunities.

Spin offs from public research bodies such as A*Star are quite common in Singapore, since there is a strong interest in translating research into commercialization. Indeed, in my other business incubator company, Capbridge, half of our companies are spin offs from research institutions.

Global cancer market is expecting to grow from 14 million to 22 million of new cases by 2030, with strong presence in Asia. How will you go about capitalizing on this increasing regional demand?

This trend is a result of global demographic factors such as an aging population and increased environmental challenges. Nevertheless, regions like Asia or other developing territories will be more affected because of the industrialization developed during the last three decades and the side effects created, such as pollution or stress.

We have seen Asia to be the key market for us to invest in. This is not to say that other continents like Europe or US are not in our plan, but Asia is going to be in our top priority in terms of having such a system in place. In fact, we have recently put one foot in the UK and, therefore, we are also looking to other markets such as Germany or Spain.

Just to showcase the regional need of such digital solutions, there will not be enough infrastructures to meet the growth of these healthcare demands, especially in the space of cancer. There are capacity limitations since we cannot train enough cancer specialists fast enough, nor

build enough cancer-focused hospitals in time. Therefore, we need to look at technology healthcare solutions such as oncology-PDO to move forward. I am fully conscious that we are only a part of the overarching solution; nevertheless, we have an obligation to bring such innovation to the market.

What makes you the provider or partner of choice within the industry?

We have worked hard to design our solutions to our stakeholders' needs ensuring that our services are fully targeted to their demand through formation workshops and other type of collaborations.

What will be your advice to other entrepreneurs looking to find the courage to start their own business in Singapore?

My advice to any entrepreneur will be to not take too long to undertake the decision to start their business. It's well understood that effectively embracing change and transitioning into the future requires a significant amount of due diligence—but time is critical and simultaneously sparse. Beyond time, building great partnerships and capable teams are crucial factors to take into consideration.

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