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Jay Dong, founding GM (China and APAC) and Global VP of Cell Signaling Technology, shares the companyâ??s success in the past ten years; the economic transformation in China driving the growth of the biotech and pharma industries; the cutting-edge solutions and technologies Cell Signaling Technology is committed to providing to scientists and researchers in China; and his focus on building a sustainable and supportive ecosystem for China-based innovations to reach patients in

China.

Jay, it is just over ten years since you first established the Cell Signaling Technology (CST) China affiliate in Shanghai. Looking back at your journey, and particularly in the last few years since we last interviewed you in 2012, what are the top highlights?

Cell Signaling Technology (CST) was founded by Dr Michael Comb in 1999, who had directed the Molecular Neurobiology Lab at Massachusetts General Hospital and served as an Associate Professor of Neuroscience at Harvard Medical School previously. The mission was to provide the best tools to scientific researchers to study the mechanisms of diseases like cancer. This is what we continue to be passionate about: science, solutions to facilitate science, and services catering to the pain points of scientists in laboratories.

This is why CST was established in China in 2008. I had previously been leading the APAC business unit of a US Fortune 500 medical technology company based in the Singapore APAC regional headquarters and I was approached to establish CSTâ??s Chinese operations from scratch and also manage APAC operations. Then, as now, we believe that our fundamental objective is to offer more solutions to serve our customers better and faster â?? to â??empower their dreamsâ??, so to speak. At the end of the day, scientists want to publish papers, advance their research, and find novel compounds or discoveries that could eventually lead to a therapeutic target, a diagnostic target or a new technology â?? which will ultimately result in more efficient and/or better treatment for patients.

The last five years, in particular, have been great for CST, buoyed by the overall positive economic transformation of the Chinese economy, which is moving from being a domestic, export-driven economy to an international, innovation-driven one. The Chinese governmentâ??s focus on emerging industries, most notably biotech and pharmaceuticals, mean that these industries will benefit tremendously from, firstly, increased funding; secondly, a growing talent pool from global markets that are attracted to the Chinese market; thirdly, the policy bonus from initiatives at the national, provincial and institutional levels. With money, talent and policy coming together to foster this positive economic development, the environment is excellent for companies in general, both multinational and domestic.

For CST specifically, our growth and success in the past few years can be seen in our recent move to our new offices with doubled size and tripled warehouse space here. I told my team, we have moved from our previous â??singles student dormitoryâ?? to a â??villaâ??, with our new four-story, standalone building that offers a state-of-the-art working environment for our employees. We have even built an in-house gymnasium to promote the health and well-being of our employees.

Nevertheless, while it is important to recognize and celebrate our past success in China, having supported the dreams of many Chinese scientists, now the priority is to expect and work toward the future. We have full confidence in CSTâ??s future in China and it is a very exciting time for us.

How is CST contributing to Chinaâ??s goal of moving towards a â??Healthy China 2030â???

One of the most significant characteristics of the Chinese market is its aging population, which is perhaps unprecedented in the entire history of mankind. The â??One Childâ?? policy implemented by the Chinese government in 1980, which ended only in 2016, actually changed the normal distribution of the countryâ??s population. By 2035, for instance, it is estimated that there would be

400 million elderly people in China. This is hugely disproportionate.

Humans are like cars. When we age, our bodies wear out. In particular, we develop conditions like cancer. The statistics in China are shocking. According to the Chinese Medical Association, 30 percent of new cases of lung cancer were in China, while half of new liver cancers were in China, in 2017. Already, in China, there are more than four million newly diagnosed invasive cancer cases annually! The aging population is a huge challenge for government and society, and at the same time, a key opportunity for industry players to offer their solutions and contributions. It is our responsibility as a company to think about how we can contribute to the solutions. We are truly, deeply passionate about this. With science and innovation deeply embedded in our DNA, I certainly feel that CST can contribute strongly here.

We provide invaluable tools for cancer research to be conducted. This is why we have been awarded the CiteAb â??Antibody Company Succeeding in Cancer Biologyâ?? award and recently the â??Life Science Reagent Supplier of the Yearâ?? award. For instance, today, everyone is talking about anti-PD therapies, and that space is very crowded. Anti-PD-1/PD-L1 antibodies are fantastic antibodies that functions much like a broad spectrum antibiotic. Previous studies showed that patients expressing PD-L1 would benefit more from these therapies. With further researches, the scope of anti-PD therapy has been expanded. For instance, KeytrudaÂ® (pembrolizumab) has been approved to treat any solid tumor with a specific genetic feature regardless of this origin. However, within each cancer type, the patient response percentage varies. For anti-PD-1/PD-L1 non-responders, they will still need other forms of cancer therapies!

There are many other biomarkers and potential treatment targets, like siglec-15. This is not a new molecule per se as it had previously been discovered in bone formation but only recently in cancer. This paper was just published in *Nature Medicine* by Dr. Lieping Chen, who is also leading a clinical trial on this target. This is an example of the innovations we stay on top of!

We have tools that enable such exciting discoveries. For instance, using our novel technology PTMscanÂ®, we discovered the anaplastic lymphoma kinase (ALK) fusion protein as a biomarker in lung cancer, and this became a paper in *Cell*. Subsequently, we partnered with and enabled Pfizer to develop their lung cancer drug, crizotinib, while Roche Ventana developed a companion diagnostic kit. While ALK is found in four to five percent of all non-small cell lung cancer, this is still an important discovery. We have also found the ROS-1 fusion, which covers one to two percent of non-small cell lung cancer (NSCLC) patients. There are many more such discoveries to be made and we are just working on the tip of the iceberg so far!

The fundamental question for us is how we can make our innovations more relevant to our scientists, as well as empower our scientists with tools, technology and the right environment to translate such innovations into treatments that truly benefit patients. There are unprecedented unmet medical needs in China as well as opportunities for us to contribute, and we will very fortunate to be able to continue to contribute to this journey.

As a science-driven company that seeks to provide the most innovative solutions and antibodies to your clients, many of whom are large pharma companies with extensive resources, how does a company like this maintain this cutting-edge science leadership?

The word is FOCUS. Firstly, focus on your specific area, on your mission, on your core competence. We are not a Walmart. We have been compared to â??Googleâ?? â?? the best search engine that exists! We concentrate only on our core areas of focus instead of stretching ourselves too thin. This discipline and focus is how we have been established as the global authority on cell signaling

researches. Our posters or presentations have even been used by professors to teach signaling pathways like a textbook!

Secondly, we focus on solving the problems of our customers. This does not mean just providing a product. This means using all our tools and technologies to solve their problems and their pain points. We therefore emphasize a lot on post-sales tech support. I firmly believe the little things count. We offer a weekend support hotline, for instance. Imagine a scientist in the lab on Saturday afternoon that is really looking forward to leaving the lab, and he encounters a problem. We want to be there to help him fix his problem so that he can go home and enjoy his weekend! A friend in need is a friend indeed. We focus on serving and supporting our clients as friends.

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Thirdly and lastly, we focus on maintaining a stable and dedicated employee base, which is fundamental to achieve the above two. In the past five years, we have only lost a handful employees â?? and one of them moved on to become the general manager of another company! For three of those years, we saw zero voluntary turnover. We provide a working environment with growth and career development opportunities, so people feel engaged yet challenged. People want to feel that they are still growing and learning in their jobs. They want to do work they are passionate about and with colleagues with whom they can enjoy working.

To summarize, it is about focusing on what you do the best, delivering products and services that really solve your customersâ?? unmet needs, and building a sustainable base for your future success: your employees.

As a US-based reagents and service provider, how do you find the needs of your Chinese clients versus the needs of American clients â?? and how do you tailor your offerings to them? Has the Chinese market become more sophisticated in the past few years?

Certainly, the Chinese market is more sophisticated and more demanding â?? and for all the right reasons! While the drive to publish in international journals has always been fierce, today the competition and thirst to produce innovative papers are really intense amongst Chinese scientists â?? and accordingly, the quality of the research output has also increased significantly. In one issue of *Cell* last year, five out of ten papers were from scientists of Chinese origin and most of them were China-based! I remember my colleagues in the US asking me if this was a fluke or a sign of the future.

To further support the Chinese ecosystem of scientists and researchers, we are collaborating with *Cell* on an educational partnership initiative to educate future scientists in China. The goal is to teach young scientists and researchers about protocols, references, troubleshooting, problem-solving, peer review processes, international standards, and so on â?? all the tools for publishing quality papers in reputable international journals! This is an innovative partnership between *Cell* and us for the Chinese market, not a commercial sponsorship initiative.

In terms of the Chinese market overall, another very important trend is the increasing number of young overseas-returned scientists, and our new biomedical-related PhD students here. These young scientists â?? and the younger generations as a whole â?? are so open to new technologies and are extremely digital- and social media-driven. The dynamism in this sector is tremendous.

What this means for companies like CST is that we have a huge pool of new potential customers flowing through on a yearly basis. The potential acquisition rate is very high. The process is certainly much more dynamic than before. When I lecture MBA students, I say it is like a room with two doors: one in and one out, and a constant flow through these doors.

As a company, we must be aware of these new customers and engage them appropriately. These new graduates are so driven by digital technology and social media that we must use these platforms to reach them. WeChat, the Chinese messaging platform, already has a billion users! The platform is used extensively for work as well. We are also aware that a part of these graduates actually entered the biomedical field more by accident than by choice, so we need to adapt to their needs too.

How companies engage with this new generation of young, dynamic but less experienced customer base is both a great opportunity and a challenge.

Today the Chinese biopharma innovation ecosystem is finally opening to the world. What do you see as some of the remaining challenges?

In the past few years, as Chinese science has started to receive more international recognition, people are starting to ask, â??so whatâ??? Yes, we can publish papers, we can discover new molecules â?¦ but at the end of the day, what does that mean for patients? From a humanity perspective and an economic perspective, how does all of that benefit patients? Chinese researchers and scientists need to more effectively translate their research findings into clinically relevant solutions.

As a company, I believe we also need to lead the industry towards better translational medicine in order to solve the problems of patients. This is one of the reasons why we were one of the three cofounders of the Committee of Precision Medicine and Companion Diagnostics of the Chinese Society of Biotechnology. We want to focus on growing the whole pie, instead of just competing for a larger share of the pie, so to speak. Competition is healthy for the overall industry but at the moment, more than anything, China needs partnership to develop its ecosystem. The unmet medical needs are there and they are almost overwhelming. When you talk about cancer, almost everyone knows someone that suffers from cancer. We should work together to address these unmet medical needs.

To develop the right ecosystem â?? from scientific innovation to translation to productization to investment to entrepreneurship to commercial success â?? from 0 to 1 and scale-up from 1 to n, you need government policies and industry partnerships. I like the word â??coopertitionâ??: cooperate and compete. Naturally, the companies that perform best and become industry leaders will benefit the most. But at the end of the day, if you focus on the mission of contributing to mankind and solving serious unmet medical needs, your organization will benefit.

The analogy I like to use is swimming. If you are swimming, you should focus on swimming instead of looking at your rivals. If you keep looking over at them, you will automatically slow down! Focus on yourself and you will be first. If you are not at the top, do not blame others. Be better.

What do you think of the global perception of Chinese science and innovation?

Frankly speaking, the global perception and reputation of Chinese scientists, or more accurately, scientists of Chinese origins, should be improved. I actually do not like to use the term â??Chinese

scientistâ?? but prefer to say â??China-based world-class scientistsâ?? instead. There are many such scientists globally with Nobel-worthy research that feel underappreciated. There should also be better appreciation and recognition of their contributions. This is why we have started to organize the Global Scientists of Chinese Heritage Innovation and Transformation Summit (also known as RISE) to raise awareness of top scientists of Chinese origins like CRISPR pioneers Feng Zhang and David Liu, as well as Lieping Chen, the man behind the anti-PD-1/PD-L1 immunotherapies, for instance, the latter of whom we awarded the inaugural â??CST Innovation and Translational Research Award for Outstanding Scientists of Chinese Heritageâ??.

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There are many factors here and the lack of soft skills is only one of them. There are also cultural issues and understanding issues. For people to trust each other, they need to understand each other. For people to understand each other, they need to sit down and get to know each other. But the world moves very quickly and sometimes people have no time to do this. For this reason, I think scientists need to be proactive and take responsibility for their own soft skills. Think of yourself as a global player. Think of yourself as a contributor to human health in general. Think of yourself as a storyteller. We are all just trying to make the world a better place with our efforts.

This is also why I have been active in establishing a few professional organizations. I am Co-President of the Academia-Industry Consortium on Innovation and Entrepreneurship of Chinese Society of Cell Biology (CSCB), along with Professor Chaojun Li from CSCB, which bring together top scientists and business entrepreneurs to discuss how to bring discoveries from idea to commercialization, so that they can attract funding from investors.

On a more personal note, it is ten years and counting for you with Cell Signaling Technology in China! You mentioned that personal growth and development was important to job engagement and satisfaction. Are you still learning and growing every day?

Definitely. I learn something new every day! From starting as an immunology scientist and member of the American Association of Immunologists to managing Asia Pacific for a U.S. Fortune 500 company to becoming the founding GM of the Chinese subsidiary for a multinational company and now acting as a passionate industry leader to advance the whole industry, I am still very excited to see where life will take me. In many ways, I think my journey has only just started. This year, I have even set a personal goal for myself of using our new office gym at least once!

As they say in tennis, you do not win until you win the match point. In business, you are only as good as your last quarter. Companies in China should have this sense of urgency because there are huge unmet medical needs. People are dying out there. While great, past successes are past. We must focus on the future. This means continuing to enjoy, empower and challenge myself!

I am also energized by developing the next generation of industry and business leaders. When I went to the US in 1991, the American dream was to drive a car, own a house and start a family. In China, the desire for a better and healthier life is the same. I was one of the first people in my generation to move from the scientific research side to the â??darkâ?? side of management and marketing. This requires P&L and people management skills, otherwise you will only be a one-man general. In the same way, I have seen my employees and friends grow from graduates to scientists and researchers to business managers and executives. I have also seen customers becoming friends and sometimes partners. I feel like we are empowering all their dreams and that is very

fulfilling.

As for CST in China, we will continue to remain relevant and enable scientists to make more innovative discoveries, as well as use those discoveries to deliver novel products to patients in need.

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