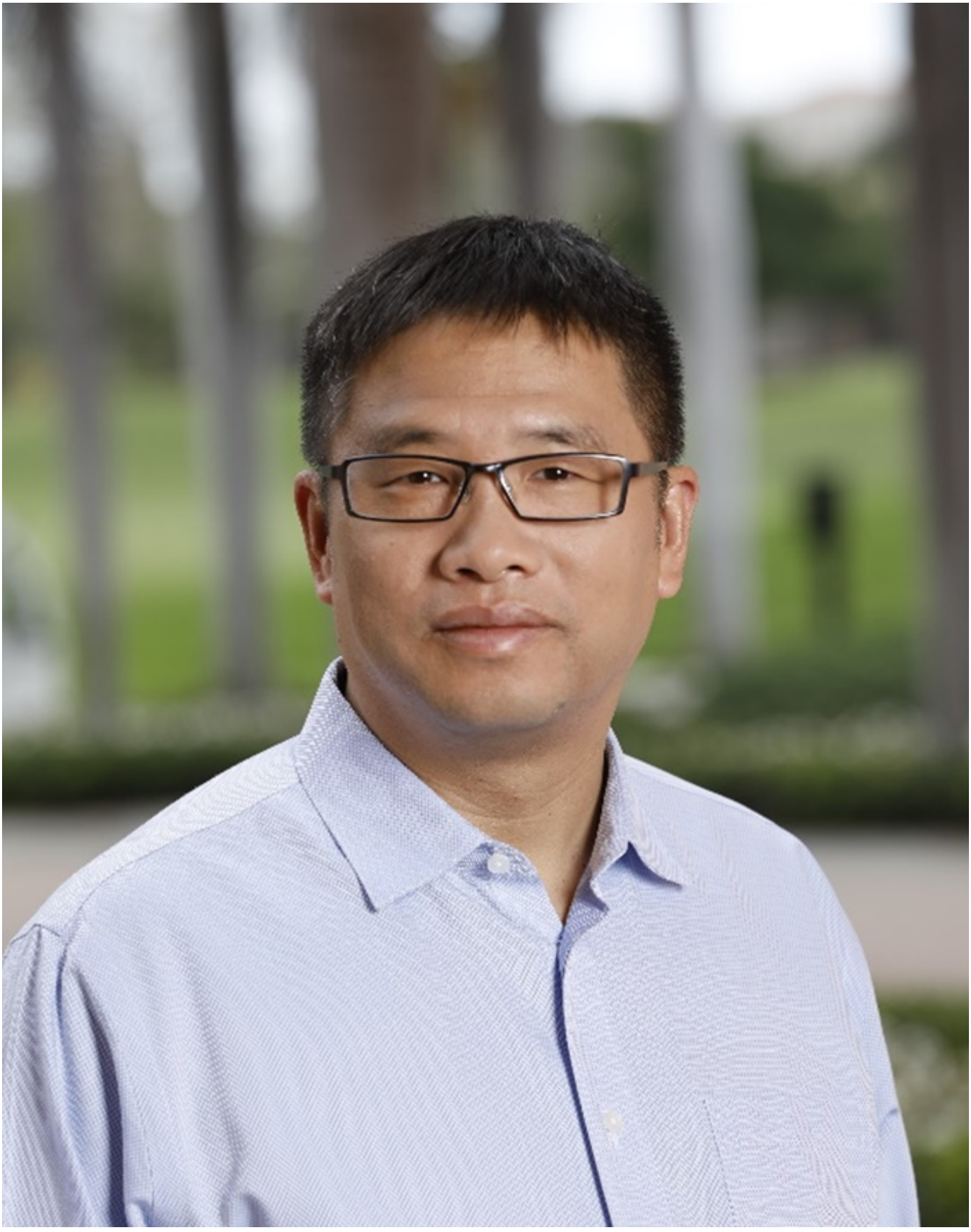
Li Qing â?? VP & GM, Illumina China



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Li Qing of Illumina China discusses his recent move to the company, the strategic significance of the China market to Illumina global, and the competitive landscape for next generation sequencing (NGS) in China.

Qing, you joined Illumina in April 2019. What has been your first impressions of Illumina China?

Illumina has been present in China since 2008 and the past decade has seen impressive growth for the company here. As newly appointed China GM, my mandate is to collaborate with my colleagues here to continue to evolve the business and take the organization to the next level.

When Illumina first entered China, our products were mainly introduced to the academic and research segments. Our first groups of customers were universities, research institutes and some pharmaceutical companies. We have built a very strong brand in research. Since 2014, we have started moving into the clinical space, partnering with local companies like Berry Genomics, one of the leaders in non-invasive prenatal testing (NIPT) in China. We provide them with the technology to develop diagnostic equipment for the provision of services like NIPT and cancer diagnosis and treatment.

2018 was a milestone year for Illumina China because we received NMPA approval of our diagnostic Next Generation Sequencing machine, MiSeqDx System â?? our first Illumina-branded clinical product. This means that we are now able to supply our technology to thousands of hospitals. Due to Chinaâ??s regulatory environment, we cannot work with patient samples so we do not work on the service side. We position ourselves as a technology platform and solutions provider for hospitals and companies looking to offer next-generation sequencing (NGS) services. With the clinical version of our machine now approved, we hope this will increase access to our technology. This would mean that potentially millions of patients in China could benefit in areas like NIPT, cancer diagnostics, genetic diseases, and microbiology.

Moving from the research space into the clinical space is currently a strategic area of focus for Illumina China. We want to help more patients benefit from our technology.

On a more personal note, what motivated you to move from a large healthcare conglomerate like GE Healthcare to a more niche technology player like Illumina?

The vision for Illumina is to unlock the power of the genome to improve human health. We are a technology-driven company. One of the reasons I joined Illumina was its commitment to this vision and the speed at which Illumina works. Historically Illumina launches a new and improved machine almost every one to two years! We really care about technological progress and developing the next cutting-edge NGS technology. In addition, we care about both quality and cost. For instance, the newest NovaSeq only costs a third of the previous version per gigabyte., we continue to persist with improvements and innovations because we want to increase access to whole-genome sequencing and lowering costs will help achieve this. Physicians would be able to use the technology to serve more patients. Ultimately, this will trigger volume-based growth for us as well.

Another unique aspect of Illumina is its emphasis on partnership. Of all the healthcare technology companies I have worked for, only Illumina truly has an open-source platform mindset. Our focus is to work with our customers to maximize the number of patients with access to this technology. This is why we work extensively with partners to share our technology so that our partners can develop new applications and products. In China, we currently have around 20 partners, such as Berry Genomics for NIPT and Novogene for clinical research.

This is a very smart and inclusive strategy. It allows our technology to permeate the entire market and also supports our growth while simultaneously building the capabilities of the overall industry. Illumina is looking to build a productive ecosystem in China through what we term â??competitive partnershipsâ??. This actually allows us to capitalize on the fullest potential of the market. I can say with confidence that without our partners, we would never have been able to grow so quickly in China.

We are also committed to educating and training the overall industry. There is a serious knowledge gap within the industry, so we are working to bridge it. For instance, 50 percent of cancers cannot be diagnosed using only DNA. You have to work with RNA as well but RNA degrades quickly so you need fresh samples. If hospitals send them out to third-parties, the turnaround times are longer so it is better for hospitals to do this in-house. But as mentioned, there is a knowledge gap so not all hospital professionals know how to do this. Therefore, we work actively with hospitals and government agencies to provide training and qualifications. For instance, China requires hospitals to undergo training and qualification in order to offer NIPT. We offer free diagnostic tests (through third-parties) to some patients and their families to precisely diagnose rare diseases. Overall, we currently have around 2,400 doctors enrolled in our various training programs. We also have an online Academy that helps to train more doctors and customers.

What is the strategic significance of the China market to Illumina HQ?

China is extremely important, and we receive a lot of support from Illumina Headquarter. As a matter of fact, we have recently moved to a new and larger office in Shanghai, which gives us more space for our growing organization as well as enables us to provide better training and services to our customers and partners.

In addition, we are also looking at additional investments in China, including a manufacturing facility, a customer collaboration centre and potentially an accelerator. In 2014, the first Illumina Accelerator was launched in San Francisco, California. It is a company creation engine focused on partnering with entrepreneurs to build breakthrough genomics startups. Illumina Accelerator is proud to open its first international location at Illuminaâ??s Europe, Middle East and Africa (EMEA) headquarters in Cambridge, UK.

Illumina is looking at some highly innovative models of increasing our presence in China. We want to help more customers in China understand the potential and value of our technology and solutions â?? and how they can use our technology and solutions to serve patients better and help the health of the Chinese population.

Having a local manufacturing facility will help us shorten local regulatory approval timelines as well as better secure our supply chain. For instance, in addition to the devices and equipment we supply, we also need to deliver some consumables that have to be transported via cold chain logistics. In addition, in the middle term, having our local manufacturing facility would provide a platform for us to work on local innovations catering to the needs of the local market in case we identify opportunities to customize some of our products or applications specifically for Chinese consumers. We would also be able to partner with local companies, hospitals and physicians to develop local applications of our technology. Such initiatives will ultimately benefit many patients.

Next-generation sequencing (NGS) and the use of it in diagnostics and precision medicine are very hot topics, particularly in China. The barriers for entry are also relatively low compared to the pharmaceutical industry. How do you assess the competitive landscape in China?

Both local and foreign companies have launched their own machines, including our traditional global competitors. Nevertheless, we are not too concerned about the competition for a number of reasons. Firstly, we believe that there is still a lot of potential to develop and improve NGS technology more. The entire NGS process is still far too complicated and sophisticated. It requires lab preparation, NGS screening, bioinformatics expertise, and so on. The entire process can take up to two weeks to reach completion, it is quite labour-intensive, and there are still a lot of knowledge gaps within the industry. Compared to other tests, which are much simpler and provide results as quickly as 30 minutes, NGS is still a very complicated technology. There is a lot of room for technology advancement and I believe that competition â?? healthy competition â?? drives growth and technological progress.

In addition, even as NGS technology is becoming more prevalent, I believe the industry is still working within a very small part of the entire accessible market. There are a host of potential applications and services and I think we are only scratching the surface of what could be achieved with NGS. We believe having more players and a vibrant playing field will drive a high-tide market. The more the market is exposed to the potential of NGS technology and solutions, the more they will learn about it and the more they will use and adopt it. This benefits the entire industry.

Finally, competition is positive for our consumers, healthcare providers and ultimately patients. It pushes all of us to improve, both on the technology and the commercial sides. At the end of the day, we are serving healthcare professionals and patients, and we want to deliver the best to them.

China launched its Precision Medicine Initiative (PMI) in 2016. As the global leader in genome sequencing technology, what can Illumina contribute here?

NGS is the core of precision medicine and precision diagnostics. The market potential for precision medicine is huge that it is virtually impossible to quantify the size.

In China, we are also seeing the use of Big Data and AI in combination with NGS technology for drug discovery and development. Pharma companies are already working on such projects and in

some cases, sourcing support from our partners. We are able to provide technical counselling or assistance without interacting with patient samples or clinical studies.

The Chinese market is still more cost-conscious relative to other markets as the affordability thresholds are lower. This is a challenge for the industry to overcome and a concern that our customers always raise with us. However, we must communicate that NGS technology can save on costs along with the entire drug discovery, development and treatment cycles. For instance, through the use of companion diagnostics, physicians are able to identify the best therapies for specific patients quickly and efficiently rather than relying on trial and error. This benefits patients, physicians and the entire healthcare system. This is also why some key opinion leaders and advocates are pushing for NGS technology to be covered by reimbursement, which is another interesting topic as well.

Ultimately, NGS is a very promising technology and there are many opportunities to use it to improve patient care and outcomes.

A final message on behalf of Illumina China?

What we are doing at Illumina is very meaningful and purposeful. This industry is advancing very quickly. It is our obligation as a corporate citizen to help our customers and healthcare professionals better understand the technology and integrate new scientific developments into their daily work.

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