IN SEOUL, DNA LINK OFFERS EXCELLENCE IN SMRT SEQUENCING

Korean service provider DNA Link has established strong expertise with the PacBio® sequencing platform in response to high global demand for the technology.

Since its founding in 2000, the service provider team at Korea-based DNA Link has sought to differentiate itself from other facilities by being an early adopter of new technologies. Different from other business models, where the organization may have to wait until there is enough demand before acquiring a new instrument, DNA Link focuses on staying at the leading edge of genomic technologies.

The company started during the height of the Human Genome Project and initially offered genotyping services such as the SNaPshot® and TaqMan® assays. DNA Link later adopted microarrays, and when the next-generation sequencing (NGS) wave hit, the scientists quickly embraced the technology. Today, the company's service division has NGS platforms from every sequencing manufacturer.

DNA Link scientists purchased their PacBio system soon after it was commercially available. Today, customer demand for Single Molecule, Real-Time (SMRT®) Sequencing is soaring — making DNA Link's expertise in running the platform a prime asset. Most projects run on the PacBio system focus on *de novo* sequencing, but there is growing interest in SNP detection, haplotype phasing, and characterizing repeat regions, particularly in plant and animal genomes.

DNA Link

Facility:	Genomic Service Department
Company:	DNA Link
Staff:	58 employees spanning experimental work, R&D, data analysis, and sales and marketing
Year founded:	2000
Serves:	Hundreds of scientists, primarily from Korea; DNA Link is opening its first overseas office in San Diego in January 2014
PacBio System installed:	December 2011; upgraded to the PacBio RS II in June 2013
Demand:	DNA Link's service facility ran three times as many SMRT Cells in 2013 than it did in 2012, with robust demand from scientists overseas as well as in Korea
Website:	www.dnalink.com

A Look Inside

DNA Link bills itself as a leader in personalized genomics. In addition to its heavily used service facility, the company studies the relationship between genetics and disease — cancer is a major focus — with an eye toward developing diagnostic tools and approaches for tailored treatment.

But it's the genomic service division in Seoul that has gained the attention of worldwide researchers. DNA Link serves several hundred scientists in its home country, which is currently its largest market, but interest from abroad is rising. In January, the company will start operations at its first US branch, located in San Diego, to help build a more global presence for the rapidly growing team. The branch will initially serve as a base for sales and marketing, but the long-term goal is to open a CLIA-compliant service lab.

Since it was first formed, DNA Link has worked closely with Korean scientists based at universities, research institutes, government agencies, hospitals, and other organizations. One of the founders is Gun-Eui Lee, who helped start the company while he was a PhD student; after completing postdoctoral studies in the US, he returned to Seoul and now leads DNA Link's genomic service group.

One of the qualities that differentiate Lee's service team is its interaction with customers. Along with the company's sales team, led by Kevin Koo, DNA Link scientists frequently visit the institutions where their customers are based and

encourage in-person consultations at the start of each project. "We do that more than 10 times per week," Koo says. While it is not possible to extend that model to customers abroad, Lee and his group make sure those clients are supported with conference calls and emails. This attention to customer service helps to ensure expectations are understood and their scientific recommendations are communicated at the start of a new project. "Their success is our success," says Koo, "so we want to give them the right direction."

Other attributes that set DNA Link apart are its competitive pricing and veteran staff of scientists and bioinformaticians. "We have very experienced senior staff," Koo says, "and they provide the consistent, high-quality data that's our strong point."

Kevin Koo, DNA Link sales team lead

That experience comes in part from DNA Link's strategy of acquiring new technologies right away. Being an early technology adopter enables the scientific team to maximize exposure to the new instruments' capabilities and protocols. The sooner the scientists become familiar with a new tool, the more experienced they will be in operating it smoothly by the time other service providers and core facilities even consider bringing the same tool in-house, Koo says. "That's why we always adopt brand new technologies very early."

The SMRT Connection

It was in that spirit that DNA Link purchased a PacBio sequencer in 2011. "We saw great potential in PacBio sequencing because of the unique long reads," Gun Eui Lee says. "We figured there would be more demand for long reads, so we wanted to have more experience with PacBio than other vendors." At the time, many researchers were not familiar with the platform's features and capabilities, so Lee began to give talks about the technology at conferences.

The education campaign succeeded. From 2012 to 2013, Lee's lab more than tripled the number of SMRT Cells used for service projects, reflecting customer demands. "That increase is really amazing," Lee says. Demand for PacBio sequencing has been robust within Korea and abroad — so much so that DNA Link is now running more SMRT Cells than flow cells or chips for any of its other sequencing platforms.

Scientific interest for the PacBio service centers primarily on *de novo* sequencing, Lee says. "Without PacBio, a lot of people use short reads or mate-pair sequencing," Lee says, "but after getting the PacBio long reads, they find them much more useful for *de novo* sequencing." Indeed, Lee and Koo note that repeat business is one reason that demand for PacBio has grown so rapidly: customers who try out a project on the sequencing platform are likely to come back for more.

Lee's sequencing team has used SMRT Sequencing on a number of different organisms, including plant, human, animal, and bacterial genomes. Plant genomes in particular have been of interest, he says, because of their challenging repeat sequences. Short-read assemblies for these large, complex genomes have provided limited information — "but by adding these PacBio long reads, we've found that a lot of those repetitive regions were fixed," Lee adds.

DNA Link co-founder, Dr. Gun-Eui Lee

Recently, DNA Link clients have been expanding their use of SMRT Sequencing to other types of research projects. Lee says that scientists are asking more often about base modification data, which is generated simultaneously as the instrument performs the sequencing process. Also, there is growing interest in SNP detection and haplotype phasing, often for studies of phylogenetics, evolution, or disease. "We strongly recommend PacBio for those projects because no other platform is good for the haplotype phasing," Koo says.

"Researchers are moving to more complicated projects with PacBio," Lee adds. That suits his team just fine — after all, they are well versed in what the platform can do. "We are experts on PacBio, and we are getting more and more experience all the time," he says.

PN: PF101-010614