

PacBio Bets Customer Data Showing Improved Performance Following Sequel Upgrades Will Drive Sales

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NEW YORK (GenomeWeb) – Despite selling fewer of its new Sequel instruments this quarter than anticipated, Pacific Biosciences said this week that it thinks upgrades to the system, which were rolled out to beta sites mid-October, will drive future sales as customers begin releasing data.

In addition, during a conference call this week discussing the firm's third quarter 2016 performance, PacBio CEO Mike Hunkapiller discussed early customers' experiences with the Sequel, as well as Histogenetics' use of the RS II system for HLA typing. He also said that Roche would likely launch its version of the Sequel for diagnostic purposes in early to mid-2017, a slight delay from previous plans to launch the system this year.

PacBio has now installed more than 75 Sequel systems since launching the instrument last year, and Hunkapiller said during this week's call that the latest set of upgrades to the instrument will open up applications that would previously have been cost-prohibitive or not possible on the firm's RS II instrument.

A key portion of those upgrades include new sample loading reagents and protocols, which were made broadly available last week. The new reagents and loading protocols "dramatically reduce by a factor of more than 50 the amount of high-molecular weight DNA libraries required for optimal loading onto the Sequel SMRT cells," Hunkapiller said. Those changes not only enable researchers to sequence samples from which DNA may be scarce, but should also lead to longer read lengths, he added.

Data from beta sites has demonstrated that the upgrades are leading to improvements in read length and throughput, Hunkapiller said, with customers averaging 5 gigabases to 7 gigabases of output per SMRT cell and N50 read lengths of 15 kilobases to 20 kilobases using less input DNA than needed for sequencing on the RS II. These improvements bring customers in line with PacBio's original throughput specs for the Sequel and are slightly better than the initial 8 kb to 12 kb average read lengths the firm anticipated.

The improvements "pave the way for expansion of a variety of applications on Sequel that have seen relatively little use on the RS II because of its sample requirements," Hunkapiller said.

For instance, he said, the lower sample input requirement will help customers who are interested in doing structural variant analysis, especially from samples that have limited DNA available.

For example, at the American Society of Human Genetics and Genomics meeting last month, Stanford University's Euan Ashley presented results from sequencing an individual

with a rare genetic disorder. Using the Sequel system to sequence the individual to 10x coverage enabled the researchers to identify a deletion in a tumor suppressor. The deletion was not able to be detected using short-read sequencing technology, Hunkapiller said.

Hunkapiller also noted that investigators heading up the Genome 10K (G10K) and Bird 10,000 Genomes (B10K) projects, which plan to collectively sequence 20,000 genomes, have decided to include the Sequel system in the next phases of the projects to generate de novo assemblies for several thousand species.

The lower sample input requirements will help in those projects, Hunkapiller said, because some of the samples will be from very small organisms or deceased organisms where DNA availability is limited.

Although PacBio is primarily working to develop its Sequel system, Hunkapiller said that it still sells the "occasional" RS II system. But, "we're not actively developing that for sales other than special cases," he said.

For instance, HLA typing firm Histogenetics currently runs its workflow on the RS II, Hunkapiller said, and the company plans to continue to work with Histogenetics on the RS II. Histogenetics is now PacBio's single biggest customer. At a September meeting of the American Society of Histocompatibility and Immunogenetics, Histogenetics said that they had sequenced more than 60,000 samples on the RS II and planned to sequence several thousand samples per week on for the next several years. In addition, the firm has purchased a Sequel for research purposes.