



## Advanced Analytical Technologies Pushes Into NGS Market With New Fragment Analyzers, Partnerships

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NEW YORK (GenomeWeb) – Earlier this year Advanced Analytical Technologies (AATI) unveiled two new automated capillary electrophoresis instruments, the Fragment Analyzer Femto Pulse and the Fragment Analyzer Infinity, in a bid to accelerate its push into the high-throughput next-generation sequencing space.

Also to that end, the firm has been shoring up its relationships with NGS vendors and research institutions, the latest example of which is a comarketing partnership announced today with Pacific Biosciences. Under the agreement, the companies will jointly promote their long-read sequencing technologies and a new codeveloped large-fragment analysis kit for the Fragment Analyzer platforms, which gives researchers a reliable way to size DNA fragments up to 50 kilobases for PacBio's next-generation long-read sequencing libraries.

Founded in 1998, privately owned AATI provides a varied of automated capillary electrophoresis instruments for applications such as parallel analysis of biomolecules, DNA, RNA, genomic DNA, double-stranded DNA, pharmaceutical compounds, and proteins.

The company has experienced what it calls "explosive growth" since the release of its Fragment Analyzer platform in 2012. For instance, in January the company noted that it experienced a record 50 percent core revenue growth in 2015 after 48 percent growth in 2014. In addition, Q4 2015 marked the company's 10th consecutive quarter with sequential growth. AATI moved last August from its original facility in the Iowa State University Research Park in Ames, Iowa, to a larger facility in Ankeny, Iowa, to accommodate this growth.

AATI's top seller, the Fragment Analyzer platform, ensures DNA, gDNA, and RNA quality control, including high-resolution analysis and fast DNA separations. The platform can run 12- or 96- capillary plates, resolve fragments from 10 base pairs to 40,000 base pairs, and resolve down to 2 base pairs for fragments. "It has become a[n industry] standard," Jonathan Hagopian, director of business development for AATI, told GenomeWeb.

Many labs that had been working on other platforms experienced problems with spotty reliability, so AATI designed the Fragment Analyzer to have low fail rates. "Data quality, dynamic range, and automation benefits also catalyzed rapid market penetration," Hagopian said.

In addition, AATI's relationships with next-generation sequencing firms have helped the firm gain traction in the genomics space, Hagopian said. For instance, Illumina has published AATI's Fragment Analyzer QC solutions on its automation webpage within various technical notes and brochures.

"Our relationship with Illumina has developed rapidly since the first systems were installed in [Illumina's] San Diego [labs] in 2013," Hagopian said. "Illumina now runs 15 Fragment Analyzer systems in five cities in the US and the UK", he said. The company's work with PacBio on the Large Fragment analysis kit is the latest example of this genomics push.

Besides these relationships with NGS firms, AATI has also recently expanded the portfolio of reagents available for the Fragment Analyzer. One example is its kit for high-throughput analysis of small and microRNA. Small RNA analysis is becoming a larger area of research, but there is only one other competing instrument, the Agilent Bioanalyzer, that addresses the need for analysis tools in this area, Steve Siembieda, AATI's vice president of commercialization, told GenomeWeb.

Another of AATI's recent developments is the CRISPR-specific gel kit, which launched at the end of last year. It is designed for high-throughput screening of samples to detect CRISPR-induced mutations.

Meanwhile, the new Fragment Analyzer platforms each offer unique improvements on the older platform. The Femto Pulse platform can find longer fragments of up to 165 kilobases, and is 100 times more sensitive than other systems on the market, Siembieda said.

From a methodology standpoint a standard agarose system is the biggest competition to the FA Femto Pulse, but generally takes around 16 hours for separation alone, not including gel setup or analysis, he said. The FA Femto Pulse, though, can perform separation in about one hour.

The base price for the new platform is \$80,000, which is "more expensive" than an agarose system, which typically costs around \$35,000. However, AATI's platform "is doing things that no other instrument can do," Siembieda said.

AATI introduced the FA Femto Pulse earlier this year at the Advances in Genome Biology and Technology annual meeting, and Hagopian said that many companies have expressed interest. He added that the company is currently taking orders for the platform and plans to launch it in October at the American Society for Human Genetics conference in Vancouver, Canada. Early-access collaborators for the system include Pacific Biosciences, 10X Technologies, Roche, VIB Belgium, and the New York Genome Center.

"Femto Pulse is a brand new system," Hagopian said. "But it's very much based on the technology we established with the Fragment Analyzer."

On the other hand, the Fragment Analyzer Infinity has more obvious roots in the original capillary electrophoresis system, but is more automated. "[The FA Infinity] can be controlled with an application platform interface" and enables "truly 24-hour [hands-free] operation," Siembieda said.

The FA Infinity currently costs \$70,000. It came to the market quickly, as AATI did not have any plans to develop it as of the start of 2015, Siembieda said. "[In a year's time] we went from not having any of them [on the market] to having a bunch of them on the market," he said.

Having established its foothold in the DNA sequencing world, AATI has now started identifying applications for its products in other areas of research. "One of the things that we are doing, beside the [analyzing] nucleic acids [with the Femto Pulse], is to test non-nucleic acid materials" such as glycans, carbohydrates, and proteins, Siembieda said.

"We are going to operate in several markets, including clinical sample analysis," Siembieda said. "We also have plans to develop protein analysis kits on the Femto pulse," he said, adding that the company is "actively working with the community to explore new markets." AATI is also developing other products for the genomics market based on specific user needs, Siembieda said.