

Agilent Helps Analytical Chemist Keep Up with the Deluge of Samples She Needs to Analyze

Researchers in the fast-growing field of synthetic biology—essentially a marriage of biology and engineering—are always racing to find new molecules of interest. Molecules that might prove to be the basis for, say, a new biotherapeutic.

Research scientist and analytical chemist, Diana Jaeger, analyzes samples for River Stone Biotech, a new player in synthetic biology whose researchers have extensive experience in making, scaling, and launching products.

Jaeger runs the company's analytical laboratory in Copenhagen, Denmark, where she relies on high-performance liquid chromatography and triple quadrupole mass spectrometry from Agilent.

She notes that the startup is particularly interested in biology-based pharmaceuticals, using small molecules rather than proteins.

"We are producing active pharmaceutical ingredients using biological approaches. There are many processes and modifications that enzymes can do that you might not be able to do with chemistry," Jaeger says. "We are primarily working with yeast, which we can either modify to produce these molecules of interest, or to bioconvert a substrate into a product without the need for complex chemistry."

She can't talk about specific products because the work is still confidential at this point.



Diana Jaeger, PhD

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Keeping up with demand

"My challenge is to keep up with the molecular biologists, who are producing samples for me to analyze. They often bring me a lot of large screens but on a small scale, so in 96- or even 384-well plate format. Hundreds of different enzyme candidates and yeast strains are tested in various combinations. We also have a fermentation facility where the best strains that our molecular biologists identify are tested in large scale. The fermentation process requires optimization and our fermentation scientist therefore also delivers many samples for analysis to find the optimal fermentation conditions," Jaeger explains.

"So, for me, it's important to have high throughput. It's important that the instrument runs stable and requires minimal maintenance, so we can reduce downtime. We approached Agilent to discuss instrumentation and what type of analysis was necessary for us. We are mainly doing quantitative analysis, so a triple quadrupole was obvious for us to get. Space is also an issue in our lab, and Agilent came with a really good solution for us in the Ultivo, providing a very small footprint compared to similar performing instruments."

Small yet powerful

Ultivo is 70% smaller than other triple quads (though it still delivers the same performance), and the stackable configuration saves additional lab space.

"I'm really happy with the Ultivo. It's been running for more than a year and a half and I have analyzed more than 30,000 samples with it so far. It's been really stable and has performed very well," she says.

Jaeger also finds the Agilent system easy to use.

"I'm really happy with the software. I had never worked with Agilent before I started this position at River Stone. So working with Agilent MassHunter software was all new to me, but Agilent gave us really good support," she recalls. "They introduced me to the MassHunter software and OpenLab software, and especially the introduction to the MassHunter Quantification software saved me a lot of time getting started. I found it really easy to use and the software is a great tool for large scale data analysis."

The best solution

Jaeger says it is very convenient that the instrument reminds her to tune and checktune—that is, make sure the mass-spec parameters are within the proper limits to produce the specified mass accuracy and resolution.

"It's nice to have a little reminder when there's something you need to be aware of," she says.

With the high demand in her lab, Jaeger says she would love to have another Ultivo if the demand keeps growing: "When you have a lot of samples for quantification coming up, the best solution is the triple quadrupole."

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