Cambium Analytica relies on instruments and expertise from Agilent

Alexander Adams has assembled a team that includes scientists with agricultural, pharmaceutical, nutraceutical, and chemical backgrounds. The aim of the group, known as Cambium Analytica, is simple: become a top-tier safety compliance lab serving cannabis cultivators, processors, and caregivers.

"We had customers waiting for us to come online, so there was a lot of pressure on us to get to market quickly," says Adams, who is both a scientist and Cambium's chief executive.

Based in Traverse City, Michigan, the company now serves a state where recreational cannabis use was legalized in late 2018 and sales began a year later. (Medicinal use was approved in 2008, but not dispensaries.)

"We were having instruments installed three months ago, and now we are completely licensed and validated," Adams says. "We couldn't have done that without Agilent."

Alexander Adams

Chief Executive
Cambium Analytica

Far and away better technology

Cambium looked at all the top-tier vendors and the choice was clear.

"When we really started to be sold on Agilent is when we started to go to their center-of-excellence laboratories. We quickly found out that Agilent had far and away better technology and better software—and Agilent was particularly helpful in making sure that we understood the technology and understood what we were getting into," Adams recalls.

"We just felt that Agilent had a lot of experience. They were making a pivot into cannabis but had experience in sectors like testing pesticides and doing elemental analysis. We felt really comfortable with the methods they were adapting over to cannabis and just how much experience was going into the application development. We were able to engage a lot of talent across sectors in Agilent to put stuff together."

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All of Cambium's analytical equipment—a range of gas and liquid chromatography systems and mass spectrometers, as well as a liquid-handling robot and a real-time qPCR system—comes from Agilent. Even the analytical methods that the lab uses are based on application notes from Agilent scientists.

"In a fast-moving market like this, we wanted to be able to jump in with robust methods and be able to start validating and making minor tweaks to them," Adams says. "If we'd had to do method development from scratch, it would have been a much longer road."

When automation is essential

Cambium didn't want to have a biological lab because that would involve clean rooms and plating and really hamper throughput.

"So qPCR testing was something we knew we wanted to do. We also knew that if we got 50 samples in, we'd have a technician sitting there pipetting thousands of times—and there's so much potential for human error, so we knew we wanted robotics," Adams says.

Enter the Agilent AriaMx real-time qPCR system and the Agilent Bravo liquid-handling platform.

"It was amazing to us as a small startup that Agilent bent over backwards to make this application work for us. Long story short, we can automate from 1 to 94 samples per run. We can set up the deck on the Bravo, press run, and our technician can do other work he needs to do. When it gets upward of 40 or 50 samples, it becomes what we would consider an impossibility without the Bravo. It's just amazing. I can't really say enough about it. What's really nice is there is increased accuracy with the Bravo, which is really important because qPCR can be finicky. Even slightly different CQ values can calculate out to huge changes, so it's vital that every well gets treated the same and that's impossible to do by hand," Adams explains.

Solving problems for clients

Adams points out that there's a big difference between compliance and quality.

"Compliance means samples don't contain heavy metals, they don't have any pesticides, they have low microbial content, and so on. Quality, on the other hand, can be highly subjective," he says. "I worked in the hops industry before this, and that was always brought up: What is quality? It can be objective and can be tied to data with established parameters. But then, in beer, for example, there's this hugely subjective part of what quality is that has to do with human sensory perception and cannot be measured. What do you like? How do you perceive aromatic compounds? How does it make you feel? Do you like bitterness? Do you like sweetness? Do you like the color?"

Cannabis can be a lot like beer in that regard.

"There are so many factors to what people consider good quality. We'd like to get into that, start collecting data, and be able to present some findings. An example of this would be what growers do toward the end of the plant's growth cycle, when they try to flush out nitrates and phosphates because it's kind of a harsh smoke to have those compounds still in the plant. It would be great to create some quality parameters for nitrate and phosphate levels at harvest time," Adams says.

"There's just so much opportunity to do really cool science, really cool experimentation. There's a lot out there to figure out. We're especially interested in the agricultural component of this whole thing because there's so little focus on this being a crop. We want to be a partner in research and helping our clients develop better products."

To Adams and his team, compliance testing is an opportunity to pay the bills and to grow a business, but they are aiming much higher.

"What gets us up in the morning—and what we can really geek out about—is solving problems for people," he says. "Using our technology and using our minds and our team and our partnerships to make this industry better—that's what I think is going to set us apart."

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