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SUCCESS STORIES

Connect: enabling a cloud-connected lab

The chief scientific officer of a groundbreaking start-up shares how Connect, the cloud platform from Thermo Fisher Scientific, connects his team with partners around the world

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– Iain MacLeod
Chief Scientific Officer

The challenge

What if your company’s qPCR-based technology had the potential to help improve HIV patient outcomes in the near future, but your collaborators used disparate qPCR instruments, which impeded the ease of collaboration? How would you handle the collection and analysis of critical data? This was the situation facing Iain MacLeod, chief scientific officer and cofounder of the Massachusetts-based start-up, Aldatu Biosciences.

Aldatu uses qPCR as the foundational technology for development of a genotyping test that may help in the future to ensure HIV patients are receiving the correct antiretroviral medication. It’s the first time qPCR has been enabled for HIV drug resistance research, so “qPCR is extremely important to what we do,” says MacLeod.

When MacLeod and his team began to build their qPCR lab in 2015, the team faced several challenges: they would need to run several Applied Biosystems™ qPCR instruments in a limited space; their international collaborators would be running a variety of different types of qPCR systems around the world; and team members would not always be on-site to analyze data. These factors had the potential to create issues with connection, communication, and analysis that could impact the company’s ability to efficiently deliver its important solutions to care providers.

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The solution

Aldatu chose to equip their qPCR lab with Applied Biosystems™ QuantStudio™ 3 and 5 Real-Time PCR Systems since the instruments have a smaller footprint than previous Applied Biosystems platforms and those from other manufacturers, and because QuantStudio 3 and 5 systems can be used without linking each to a dedicated computer. “I find that to be extremely important,” said MacLeod. “We now use five QuantStudio systems, and I can’t imagine having a computer for every single one. It would just be unwieldy.”

Instead of each qPCR instrument requiring a dedicated computer, the QuantStudio 3 and 5 instruments are integrated with Connect, one of the innovative digital science capabilities from Thermo Fisher Scientific. When MacLeod’s lab team purchased their first QuantStudio instruments, their Thermo Fisher representatives came to the lab and showed them how to use the cloud-integration features. “As soon as we got the instrument, it was linked up to the cloud. We used it from day one,” MacLeod says.

“Although we didn’t even consider choosing another manufacturer, I think we would have been dissuaded from moving to a different platform because we like the integration,” he adds. “Had someone told us, ‘We know this other qPCR instrument from a different manufacturer; it has the same footprint, and it’s a little cheaper,’ I think we still would have stayed with the QuantStudio systems—because we really like the way the instruments all communicate with one another.”

MacLeod explains that for his team there are three main advantages of Connect integration. First is the ability

to watch experiments run in real time, even when team members are in differing locations. MacLeod explains, “As the chief scientific officer, I find this capability extremely useful for when I’m traveling, particularly when it comes to file sharing.

“The second benefit is that we’re able to collect data from our different collaborators around the world and analyze it all under one roof—without having to have multiple software platforms running,” he continues. “Our collaborators have a number of different types of Applied Biosystems qPCR instrumentation, and, in the past, if I didn’t have the specific software for each platform, it was impossible to read the run file; so this integration feature really is a huge leap forward.”

The third benefit of Connect integration for Aldatu is having the instrument calibration information all in one place with the ability to easily print calibration reports. “Ensuring that we have the paperwork easily accessible to show that our machines are calibrated is extremely useful,” he explains.

The results

MacLeod says that getting up and running with Connect has been easy. For example, Aldatu recently purchased its fifth QuantStudio system. “After just a few seconds of logging in with our Connect username and password, the new system was connected, and we could watch our runs,” he notes.

“It’s painless, intuitive, and straightforward—a very easy-to-use platform that I certainly would recommend, particularly for labs that want to integrate data from multiple instrument platforms.”

Not only is Aldatu using the cloud integration software extensively to analyze data in real time, the team also has taken advantage of the software’s mobile connectivity features. “Day to day, the researchers at Aldatu lean on the data analysis part of the cloud when they’re not in the office,” MacLeod explains. “Particularly those of us who have put on a qPCR run right before leaving the office for the day appreciate being able to use our cell phones to have a quick peek at the data before getting home. I’ve certainly done that on my own commute when I’ve conducted an experiment and needed to get out the door. It’s gratifying to be able to consider the results as they’re coming in on the commute and then think about the next steps without having to wait to get to a computer to look at the data.”

MacLeod cites an additional example of one of his lab partners who worked from home: “I can see that she’s been doing her data analysis on the cloud-based software because every single run file gets uploaded to the cloud. She relies on it to be able to look at and interpret her data. So, the data analysis part definitely comes into play when people are out of the office.”

Connect integration has also made a tremendous difference in improving Aldatu’s ability to work with its business partners. Many of MacLeod’s collaborators are

located in other countries, primarily sub-Saharan Africa. They don’t have newer QuantStudio instruments directly linked to the cloud but, in order to facilitate collaboration, MacLeod has introduced them to Connect, where they can either link to their own file sharing account or manually upload data files for MacLeod’s team to review for quality issues or to confirm their interpretation of the data. “They’re using very disparate platforms, but thankfully we can unify our data analysis on the cloud, and that helps quite a bit.”

MacLeod relies on the Connect integration features to help support his team’s effort in the development of genotyping tests to work toward enabling better patient outcomes and ultimately reducing the per-patient cost of HIV care—but MacLeod sees how these features could benefit any lab. “It’s painless, intuitive, and straightforward—a very easy-to-use platform that I certainly would recommend, particularly for labs that want to integrate data from multiple instrument platforms. Before Connect, I had to install so many different types of software for the various platforms. The ability to bring data files from disparate machines into one area and analyze them in tandem, instead of having many different programs open—for any lab that’s looking to expand their qPCR, these capabilities are very appealing.”

Find out more at thermofisher.com/connect

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