We analyze everything from algae to zoological samples.” That’s how Dr. Daina Avizonis describes the work she and her team do in the Goodman Cancer Research Centre’s core metabolomics facility at McGill University.

Researchers from across North America and parts of Europe send samples to the Montreal facility for targeted and untargeted metabolomics analysis or custom method development. Avizonis knew from the beginning that the facility, founded in 2011, would need an efficient process to stay on top of a workload that has grown to as many as 100 samples a day. At the heart of that process is the Agilent OpenLAB Electronic Laboratory Notebook, or ELN.

“It keeps us sane,” Avizonis says.

One of the biggest challenges

A chemist with extensive expertise in mass spectrometry and NMR, Avizonis notes that one of the facility’s biggest challenges, aside from the complexities of metabolomics, is communication.

“If you’re interested in a particular pathway or number of metabolites, somehow that needs to be communicated and documented, right?” Avizonis says. “In the lab, we discuss the best way to analyze the samples you send us, and we decide whether we’re going to use GC/MS or LC/MS or whatever it might be. All that goes into the OpenLAB ELN and keeps us focused on what the scientist needs.”

The process starts with the first conversation with the researcher whose project plan and scientific objectives are logged in the ELN. Whoever receives the samples logs those as well, noting exactly where they’re being kept so the next person can find them. In fact, all the details—instrument, method, protocols, notes, results—go into the OpenLAB ELN.

“That way, if we work on a similar project two years down the road, we can look in OpenLAB ELN and say, ‘Oh, yeah, we’ve run this before and we got good results with this many cells or that much tissue.’ Being able to effortlessly locate and look back at previous experiments allows us to give better advice to the scientist we’re working with and improves the chances of having a successful experiment,” Avizonis says.
State of the art

Always under development, the Metabolomics Core Facility includes a range of gas and liquid chromatographs and mass spectrometers from Agilent and runs Agilent MassHunter software as well as the OpenLAB software suite.

“When we were looking at different ELNs, we couldn’t figure out how to make them work for us due to the diversity of services we provide which include routine analysis and R&D. A lot of them had a very rigid workflow or process that we just couldn’t see ourselves adapting to. We wanted the software to adapt to us, and be able to change as our needs change, and I like to brag that now our ELN is highly tailored for us,” says Avizonis, who leads a highly collaborative team that shares responsibility on all projects.

That’s why each project in the OpenLAB ELN includes a communications page—a repository of all emails and documents (chromatograms, spectra graphs, spreadsheets, illustrations, screen grabs) the team has exchanged with each other and with the customer.

“When you have a number of projects going, it can get difficult to keep everything straight in your head and paper notebooks don’t really work very well for this kind of an application,” she says. “You’d have 8,000 notebooks, and where would you put them all? Besides, searching through that would be a nightmare.”

Avizonis notes that the OpenLAB ELN also comes in handy when a scientist asks for help writing a grant proposal or needs data for a journal article.

“I can pull up that experiment in seconds and know who in the lab was involved, in case there are further questions,” she says.

“In short, it’s a really nice way to keep track of what’s going on in any experiment or any project—and it keeps us focused on what the customer needs.” Is the software difficult to learn?

Avizonis laughs.

“What is there to learn?” she says.