

Tracking Better Lab Operations

By Salvatore Salamone, Senior IT Editor



Last year, the Microarray Core Facility (MCF) at the Baylor College of Medicine was badly in need of an electronic makeover. The facility, which provides a range of analytic genomic services to researchers at the college, was using paper reports to manually track samples through its large laboratory.

Then in October 2003, it deployed a laboratory information management system (LIMS) to help automate sample tracking and other processes within the center. The value of the LIMS proved out immediately — and the clear benefits from implementation garnered a Best Practices Grand Prize in IT Infrastructure and Informatics from *Bio-IT World*. The technology has given MCF workers a centralized database that simplifies tracking but also enables better service delivery to researchers and fewer administrative tasks for MCF staff.

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While the choice to implement a LIMS was a no-brainer, the question of whether to build or buy was far from settled. The MCF finally opted to outsource the project to Stone Bond Technologies, a Houston-based company that specializes in software for information, process, and knowledge management. The decision was strictly pragmatic.

"When I came here in 2001, internal groups were working on [developing] a LIMS," explains Lisa White, director of the MCF. "Two years later, there still was no LIMS."

The MCF is a shared facility used by researchers within the Baylor College of Medicine, performing a number of experiment services including quality control, hybridization, and data analysis. It also provides arrays for mouse and human gene expression, as well as offering custom arrays of other genomes.

Lightening the Admin Load

The new LIMS starts playing a role even before a sample is delivered. To submit a sample, researchers enter a request to the LIMS via a Web-based form. When the MCF is ready to accept the sample, the researcher gets an e-mail telling him or her what time to drop it off. When the sample comes in, it is bar coded and given a sample ID, which is a unique tag stored in the LIMS database for each sample.

Everything that is done to a sample can then be tracked using this bar-code ID. While this is a big benefit to the MCF itself, it also enables it to offer better service to its "customers" (researchers who submit samples for testing), simultaneously lowering demands on the center's support staff.

"Certainly it's important for us to know where a sample is in a freezer, for example," White says. But the new LIMS also lets researchers check the status of a sample through a Web-based interface. "We used to get phone calls asking, 'Where's my sample? How much longer before you're done?'" White recalls. With real-time tracking provided by the LIMS, researchers now find that information by themselves, which saves everyone time.

Once a sample is run through testing procedures, the LIMS automatically sends an e-mail alerting the researcher of the results. The LIMS has also reduced other administrative tasks of MCF staffers. With the prior system, for example, White needed five days to assemble paperwork for billing. "It'd also take a long time to collect," she adds. With the LIMS, five days for billing preparation has been cut to 15 minutes.

Additionally, the center now sends bills electronically to the accounting department. Paper-based bills used to be mailed to the researchers themselves for approval, but now the system electronically zaps the chargebacks to Baylor's accounting department, where "payment comes directly out of the researchers' grant accounts," White says. "We no longer have to wait for them to see the bill on their desk."

The system's self-administration functionality lets the center offload other administrative work, too. When a researcher first wants to use the MCF's services, for instance, staff at the center set up a "principal investigator account." From that point on, the principal investigator — aka the lead researcher — must add any lab members who need to use the center. This basically tells the LIMS and the center that these people have the right to use that researcher's account.

The system has easily withstood the test of real-world deployment, successfully processing tests on about 4,200 samples so far for the MCF.