

Advertorial

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bioMérieux's PREVI™ Isola, increases productivity, streamlines workflow, and standardizes plate inoculation



Left to right: pathologist Dr. Delphine Boraud, technician Evelyne Groliere, pathologist Dr. Jean-Philippe Brochet, and technician Virginie Molina-Andreo of the medical laboratory operated by Exalab (France).

In May 2009 Exalab installed bioMérieux's PREVI™ Isola automated plate streaker in its bacteriology laboratory in the French town of Le Haillan. The lab, headed by associate pathologists Jean-Philippe Brochet and Delphine Boraud, also benefited from a workflow audit by bioMérieux. Since being installed, PREVI Isola has enabled the lab to increase productivity, standardize inoculation procedure, improve the quality of work, and streamline workflow so that their technicians can concentrate on higher added value activities.

> How is work organized in the Exalab group?

Jean-Philippe Brochet: Exalab processes 2,000 specimens a day from fourteen different sites. Our bacteriology lab is located in Le Haillan, a suburb of Bordeaux. It is staffed by a team of two pathologists and six full-time equivalent technicians who handle 350 specimens a day. The specimens we receive are sent

by twelve physician's office laboratories and one hospital and clinic lab. With the exception of bacteriology, all our activities are ISO 17025 certified. However, now that we have moved to the new lab, our bacteriology activity is scheduled to become ISO 15189 certified.



The only award program that exclusively recognizes contributions and advances in the design of medical products.

> **What prompted you to automate your bacteriology testing in 2007?**

JPB: Back at our old lab there were five techs analyzing about 100 specimens a day in a 60 m² (650 sq. ft.) facility. We were faced with organization problems: the lack of space, growing backlogs of specimens, and impending changes in the field of bacteriology.

We were already considering creating a new centralized bacteriology laboratory and had issued a request for proposals in order to find the vendor that could help us do so.

We were looking for a solution that would enable us to eliminate the backlog with the same number of team members, automate new processes, and put us on track to becoming accredited. From the outset, our plan was to partner with just one company. Of the three companies that responded to our tender, bioMérieux was the only one that proposed a new approach. **It offered a complete automated bacteriology package backed by a streamlining of our workflow based on industrial auditing techniques.**



Streaking Ahead:

An original, revolutionary Applicator using high precision technology standardizes and maximizes colony inoculation.

> **What made you want to automate streaking?**

Delphine Boraud: At the time, our techs were processing agar plates by hand. It's a mind-numbing process, particularly if you spend your entire day doing it. We wanted to put our techs' skills to better use. That's why we decided to automate these highly repetitive tasks that offer little in the way of added value. bioMérieux's PREVI™ Isola was the only automated plate streaker available in France.

PREVI Isola automates and standardizes plate inoculation, tags each plate with a barcode label to ensure total traceability, and sorts streaked plates by type of atmosphere. **After testing it for two weeks, we added it to our routine testing protocol.**



PREVI Isola has a throughput of 180 plates per hour.

> **What training did you receive for PREVI Isola?**

DB: We received two days of hands-on training in operating PREVI Isola after it was installed and connected to our LIS. To be quite honest, **PREVI Isola is so easy to operate that we were ready to start streaking plates after just two hours of training.** We spent the rest of our time familiarizing ourselves with the system's workings. What actually took the most time was all the work that went on beforehand. But it was necessary in order to be able to integrate the system correctly. bioMérieux audited every aspect of our work, from pre-analysis, the types of specimens and containers, and specimen arrival times, to how specimens are prepared for each type of test, inoculation runs, the panel of plates to be streaked, the compatibility of specimens in each run, and more. And that was essential.

Its ease-of-use and all the work that was carried out beforehand made PREVI Isola the easiest system we have ever installed at our laboratory.

> **How has PREVI Isola benefited your laboratory?**

JPB: Since we installed PREVI Isola in May 2009, we have seen a positive change in our team's performance.

They are less stressed than before and have more time to concentrate on more important tasks while PREVI Isola streaks plates.

In addition, the applicator maximizes colony isolation, making reading and analysis by our techs easier and faster. **PREVI Isola equates to almost an additional FTE employee.** Without it, we would have had to hire a seventh tech a year ago.

DB: Our techs were a little uneasy about the idea of a machine streaking plates for them. They felt that it would eventually take their place. But now, several months down the road, they can't do without PREVI Isola. They've really taken to it. **Each day PREVI Isola streaks over 450 agar plates in less than three hours** over three to four runs depending on when specimens arrive. That amounts to 90% of our activity, and our techs no longer have to deal with it! Another advantage of PREVI Isola is that it requires very little maintenance.

> **What role does PREVI Isola play in your accreditation process?**

DB: PREVI Isola is going to make it easier for us to obtain accreditation. It has already allowed us to improve traceability, standardized plate streaking, and plate reading in the lab. Because it isolates colonies without the need for intervention by our techs, plate reading is standardized and analysis is improved. Also, it isolates colonies better. As a result, it is easier to select them when preparing inocula for identification or susceptibility testing and there is less rework.

JPB: Accreditation is synonymous with standardization. PREVI Isola has enabled us to set up a standardized system for about 90% of our specimens. We have also simplified this system by revamping all of our inoculation protocols. PREVI Isola is also a real traceability time-saver. It tags each plate with a barcode label that contains information such as the full name and birthdate of each patient, the identification number and type of each specimen, and the incubation atmosphere etc..

We expect that PREVI Isola will help us get our laboratory workbench accredited by late 2011.

Interview with Dr. Jean-Philippe Brochet and Dr. Delphine Boraud
of Exalab's medical laboratory in Le Haillan, France.

> Now that other automated plate streakers are on the market, are you thinking of changing yours?

JPB: I like things to be simple. PREVI Isola is exactly that because it is easy to set up.

DB: We like things to be simple and straightforward. We need an automated system that can easily take care of 90% of our routine analyses so that we can concentrate our energies on the remaining 10%. In terms of streaking and isolation, PREVI Isola does just that. Rather than purchasing a system from another manufacturer, we're actually considering buying another PREVI Isola and using it alongside the current one.

> What do you think of bioMérieux's service policy?

We're trailblazers in the field because we were the second laboratory in France to install PREVI Isola. When you're one of the first to use a completely new system, it's difficult to form an opinion on the quality of service provided. Also, PREVI Isola's reliability quickly increased with experience. That said, we both must admit that bioMérieux's service team is highly responsive. We've never experienced a situation where the system was shut down for an entire day. Since we only use PREVI Isola at a rate of three hours a day, if a backlog ever were to occur, we would be able to catch up on it by eight o'clock the same evening.

> Why did you carry out a review of your bacteriology workflow in 2007?

JPB: Actually, that wasn't our idea. We had already identified certain internal issues, but we hadn't really looked for any solutions. At the time, our bacteriology activity represented about a hundred cases a day for five FTE staff. Space was tight in our 60 m² facility. There was clutter everywhere, and we were aware that our workflow and organization were the cause. In 2007 we were handling nearly a hundred specimens a day. You should have seen the rush whenever they came in. With everyone was bustling to get to the specimens, you would have thought it was a beehive! At the time we also knew that we would have to increase our throughput capacity and that the problems we were experiencing would

only get worse. It was then that bioMérieux offered, in addition to automating our streaking process, to review our workflow with its consultant* using the LeanSigma™ methodology. **Their aim was to help us make our workflow efficient, eliminate unnecessary tasks, cut waste, identify and solve organizational problems, and shorten our time-to results.** After becoming a centralized laboratory, we began facing the same process optimization and cost reduction challenges as those encountered in industry. The audit therefore focused on completely automating the microbiology laboratory and was based on LeanSigma™, a methodology that improves efficiency and organization.

> What did the audit consist of?

PB: For one week a bioMérieux biologist and an industrial process engineer observed everything we did, timed our procedures, and loaded all the data into a matrix (process per specimen, modeling tool designed specifically for the audit). We also discussed the growth prospects for the laboratory. The audit's findings were presented to the entire team, including our techs, in a completely transparent manner. At the start, our techs had a little trouble understanding terms such as 'productivity gains' and 'flows'. But they realized that they already knew what those terms meant, it was just that they were quantified and assessed.



PREVI Isola improves plate reading and colony isolation. As a result, inocula are easier to prepare for identification or susceptibility testing and there is less rework.

About bioMérieux



Advancing diagnostics to improve public health

A world leader in the field of *in vitro* diagnostics for over 45 years, bioMérieux is present in more than 150 countries through 39 subsidiaries and a large network of distributors.

bioMérieux provides diagnostic solutions (reagents, instruments, software) which determine the source of disease and contamination to improve patient health and ensure consumer safety. Our products are used for diagnosing infectious diseases and providing high medical value results for cancer screening and monitoring and cardiovascular emergencies.

Focused on faster time-to-results, bioMérieux introduced FMLA™ (Full Microbiology Lab Automation) to streamline the workflow and increase the efficiency of the microbiology laboratory, from specimen reception and distribution, organism identification and antimicrobial resistance analysis, to result management and interpretation.

FMLA helps laboratories achieve substantial productivity gains by improving efficiency and use of automated systems.

> What recommendations did the auditors make?

JPB: The team of auditors proposed a number of ways to increase our lab's efficiency, such as rearranging the layout of our work stations to eliminate unnecessary movements, adjusting our work times, creating operational units for our workbenches, and increasing the ergonomics of our workstations. They told us that we could improve our logistics by staggering deliveries of specimens, revamping our pre-analysis stage, and training our staff.

They also calculated our productivity gains and our time-to-results, something we had never done before!

*Vendor's note: independent consultant specialized in industrial process and under contract with bioMérieux.

Another crucial point to obtaining accreditation: the implementation and monitoring of performance indicators, which we have yet to do.

> What have you implemented and what benefits have you seen?

JPB: We implemented the audit's recommendations nearly to the letter, and very quickly saw positive results. Our workflow is now much less labor- and time-intensive, we have enhanced ergonomics in the lab, and we have three times as much room as before! Lastly, we went from being hit by rushes to a lean way of working.

Streamlining our workflow has brought three advantages: less stress, greater efficiency, and more room. Although we knew that these changes were necessary, it's not always easy to tell yourself that your original way of working was not exactly the best.

Since the audit, we have changed our traditional perspective of how a medical analysis laboratory should be organized.

We now look at everything through this new lens. Back in our old lab, we had installed PREVI™ Isola and our other instruments wherever we could find room for them.

After the audit we quickly realized our mistakes. We saw, amongst other things, that organization in the lab was overly complicated, huge amounts of time had been lost through running back and forth from station to station, and our workflows were overlapped etc...

> What do your techs think about the audit?

DB: Our techs were involved in the changes and the audit from the very start. They were taken aback the first time we spoke to them about increasing our productivity. But now that they see the advantages, particularly in their lighter workloads, they support it. They now realize that **we never could have tripled our productivity without the automated instruments and the organizational changes.**

They both accept and actively implement the changes.



Lab technicians see increased productivity and spend more time doing other added value tasks.

Since the audit, we have been constantly discussing how to continue improving our lab's efficiency.

JPB: The audit has enabled our techs to do more and provided them with a better organization and better tools. None of them want to go back to the old way of working. They may be more productive, but they are less tired than before!

>Would you advise other medical laboratories to carry out a workflow audit?

JPB: Yes, because it enables you to have your methods analyzed by industrial process engineers.

Their perspective, methodology and experience are all very beneficial.

We thought that we would be able to do everything and to do it well.

However, we had to accept the fact that we could no longer do things the way we did twenty years ago.

We may be experts in analysis, but we need to enlist the services of skilled experts who can improve how we operate. When you move from a small unit to a large laboratory, you need to rethink your workflows, otherwise you can expect bottlenecks.

The engineers who audit workflows are there to pinpoint any weaknesses and propose the appropriate solutions. The savings are enormous!

Although we perform three times as many analyses as before, our stress level has gone way down. In my opinion, it is better to be pre-emptive.

About bioMérieux



PREVI Isola: the groundbreaking automated plate streaker

Agar plate inoculation is both repetitive and tedious. Automating this core task provides microbiology technicians with the time they need to concentrate on higher added-value tasks.

PREVI Isola:

- First installed in November 2008
- Minimum throughput: 180 plates per hour
- Standardized inoculation for 90 mm plates or bi-plates
- Automated, standardized inoculation and isolation
- Revolutionary applicator maximizes colony isolation
- Flexibility of container, specimen and agar plate types
- Special design eliminates cross-contamination
- Protection of staff and specimens: class II HEPA filter
- Traceability:
 - Batch numbers/expiration dates of consumables and reagents
 - The bottom of each streaked plate is tagged with a barcode label for specimen and patient identification

The organizational methodology behind LeanSigma™, which we have been implementing since the audit, correlates well with the ISO 15189 standard. It is in full keeping with the standard's requirements and provides highly useful indicators for bacteriology.

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Thanks to the French team for providing this interview.