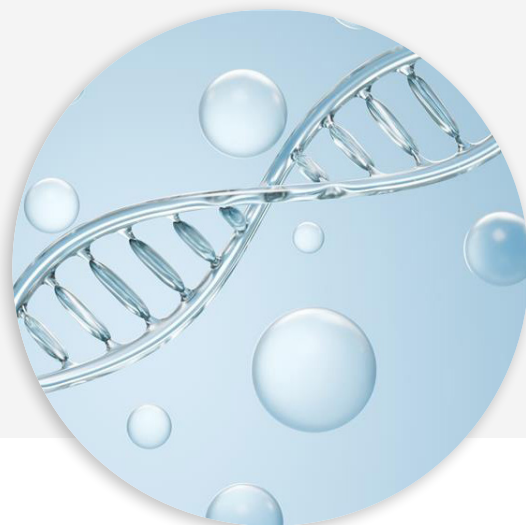


Customer Interview

From Manual Challenges to an Automated Revolution



Anaïs Certain, Director of the Liquid Biopsy Platform at the Paris Institute for Transplantation & Organ Regeneration (PITOR)

In the highly promising field of liquid biopsy and non-invasive transplant monitoring, few laboratories worldwide are experiencing growth as spectacular as that of the liquid biopsy platform led by Anaïs Certain. Based at the Paris Cardiovascular Research Center (PARCC), this platform is part of PITOR (Paris Institute for Transplantation & Organ Regeneration) and operates under the supervision of Prof. Alexandre Loupy.

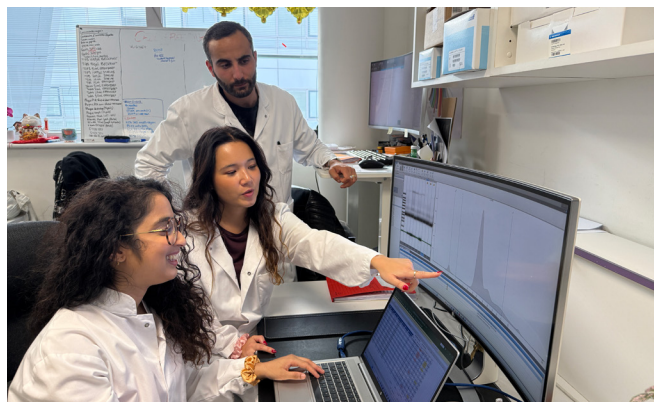
In this Q&A, Anaïs Certain discusses her career and shares the keys to this change in scale, driven by the acquisition of the Biomek i5 Automated Workstation, the use of Apostle MiniMax cfDNA Isolation kits and the support of the Beckman Coulter Life Sciences team.

Can you tell us about your background and how the liquid biopsy platform came to be?

Anaïs Certain: I trained as a biotechnologist and have been working in the healthcare sector for more than eight years. After my first research experience in a team dedicated to ex vivo research, I spent several months in the pharmaceutical industry, where I discovered large-scale automation. However, I missed research, and in 2021 I decided to return to academia by joining the team of Professor Loupy,

who is internationally recognized for his work in transplantation, particularly transplant rejection.

Within this unit, which is part of the PITOR institute, my mission is to develop liquid biopsy approaches for innovative clinical applications, especially in organ transplantation. Our platform now includes seven people working in technical and data management roles. Positioned at the interface between research and clinical practice, our core activities focus on the analysis of cell-free DNA, a non-invasive biomarker for graft monitoring.



Why this biomarker, and what are your initial findings?

Following a conference in the United States, our research team leader identified the potential of the cell-free DNA biomarker and began testing it in France.

This work led to the analysis of a cohort of nearly 3,000 patients, demonstrating that high levels of donor-derived cfDNA were strongly associated with the presence, activity and severity of all types of renal allograft rejection. The biomarker also added significant value to standard clinical monitoring for the prediction of rejection. This multicenter study, conducted across 14 centers in France and the United States, was published in *Nature Medicine* in 2023.

Although urinary, plasma and serum biomarkers are integrated into routine clinical monitoring, their ability to specifically detect rejection at an early stage remains limited. In this context, cfDNA has been explored as a complementary biomarker. Initially applied to kidney transplantation, it is now being extended to heart, lung, liver and uterine transplants.

Over the past four years, our platform activities have grown significantly. We have expanded from 3 to 45 partner hospitals across Europe, with a substantial increase in the number of samples to be processed.

How does the analysis of cell-free DNA change the way transplant patients are monitored?

This biomarker, specifically small fragments of DNA detectable in the bloodstream, offers a unique window into the condition of the graft. With a simple blood test, we can identify the very first signs of graft damage, enabling early monitoring of potential rejection. It is a revolutionary alternative to biopsy, which is invasive, costly and often difficult to repeat on a regular basis.

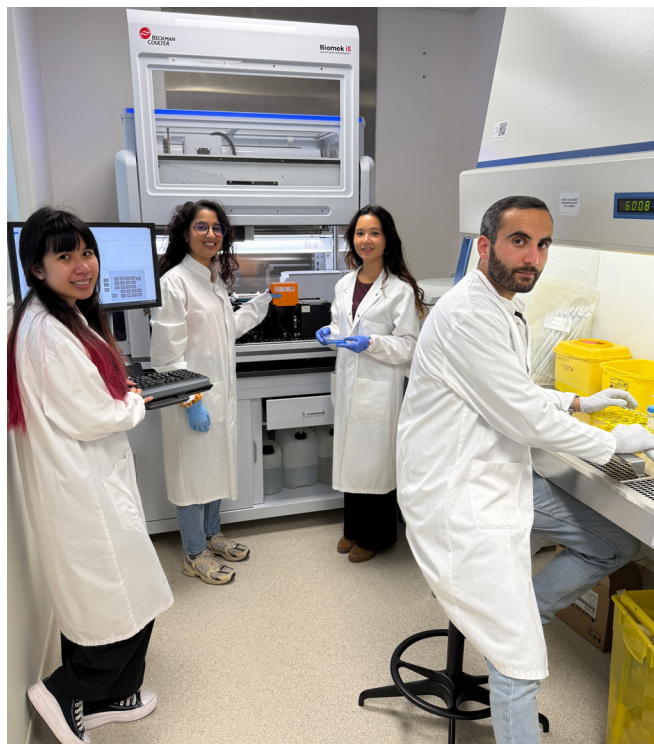
Your laboratory has undergone a major transformation with the integration of the Biomek i5 Automated Workstation. What prompted the decision to automate?

The challenge was clear: we had more and more samples to process, and manual work was no longer sufficient. We needed to find a solution to automate our DNA extraction process while maintaining the high quality of our analyses, even with very low elution volumes of around 20 microliters.

What led you to choose Beckman Coulter Life Sciences?

It all started at the Forum LABO Paris 2023 trade show, where we were able to speak with several equipment manufacturers and learn about their offerings. We were impressed by the comprehensive approach proposed by Beckman Coulter Life Sciences, not just equipment but a true scientific collaboration

based on a complete solution integrating three fundamental pillars: high-quality reagents, a robust automation platform and expert, responsive human support.



Reagents clearly play an important role in your workflow. How do they influence the quality of your analyses?

The quality of reagents is a key factor in our analyses. The Apostle MiniMax cfDNA Isolation Kit uses magnetic nanoparticle technology to efficiently isolate very small amounts of circulating DNA, even from low sample volumes. We tested several solutions, and this one proved to be robust, reproducible and fully compatible with automation.

What does the Biomek i5 Automated Workstation bring to your day-to-day work?

The Biomek i5 Automated Workstation allows us to manage a large number of samples in parallel with unmatched precision and reproducibility. It is a compact automated liquid handler equipped with a 96-channel pipetting head and integrated peripherals for incubation and shaking.

The Biomek i5 Automated Workstation is not a “black box.” The platform is open and configurable, and we were able to adapt it to our protocols, for example by switching from plates to tubes depending on our needs. This adaptability ensures that the system fits seamlessly into our existing workflow rather than constraining us. The robustness and flexibility of the platform have truly transformed our daily work.

How did the support from Beckman Coulter Life Sciences make a difference for your team?

The support from Beckman Coulter Life Sciences was a decisive asset from the very early stages of the project. Even before purchasing the Biomek i5 Automated Workstation, we were able to test it using our own samples and protocols in a laboratory that was already equipped.

The responsiveness and availability of the Application Specialist team have always been exemplary. Far beyond installation, Beckman Coulter Life Sciences committed to a true partnership, remaining available to meet our needs, whether for protocol optimization, adaptation to technical constraints or even transferring the Biomek i5 Automated Workstation to a dedicated room.

BeckmanConnect software fits fully into this service approach by offering fast and effective remote assistance. At our request, the Application Specialist team can connect instantly to diagnose an issue and adjust settings without interrupting our work.

What impact has automation had on your research?

The results have exceeded our expectations. We have moved from processing two to three samples per day to an automated capacity of up to 24 samples per day, or 48 to 72 per week, representing approximately 5,700 samples analyzed over four years.

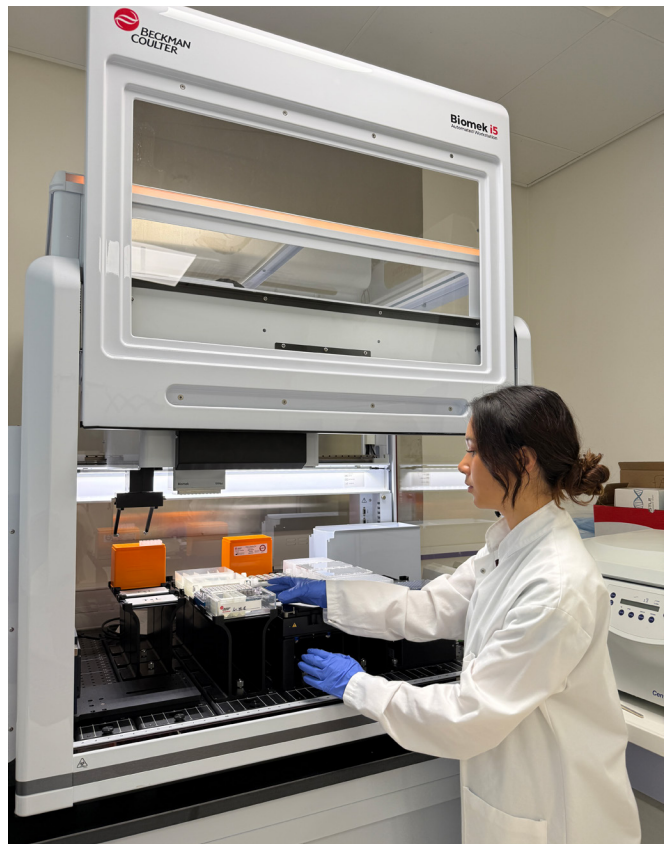
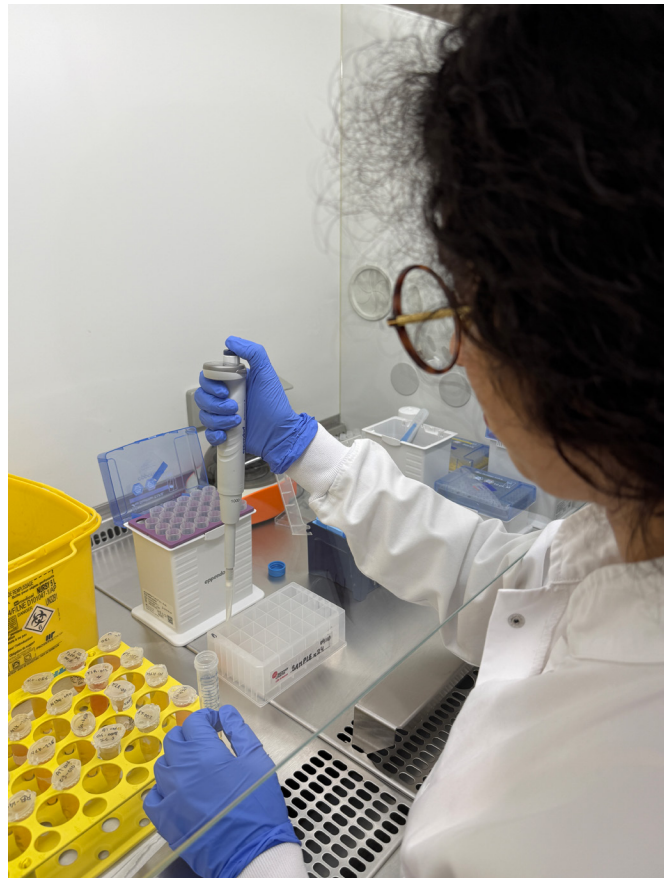
The automated system handles the entire DNA extraction process, reducing hands-on technical time per run by four hours. This allows us to study much larger cohorts, validate our hypotheses more quickly and support clinicians on a daily basis in monitoring their patients.

Beyond the numbers, the quality is also striking. Numerous tests and protocol adjustments have enabled us to maximize concentration and yields, even from very small sample volumes. Innovations such as plate monitoring cameras help prevent up to 80 percent of errors.

But the instrument alone is not enough. It is the combination of the instrument, reagents and human support that makes the difference.

What's next?

Our prospects are very promising. Preliminary results from the European EU-TRAIN project, which focuses on kidney transplantation, show that our implementation of cell-free DNA has reduced the need for biopsies by around 70 percent.



We are also participating in the AI CARE study, launched in July 2025 in several hospitals, which aims to confirm the clinical value of this biomarker in routine practice and to obtain reimbursement through the health care system.

By combining high-performance chemistry, automation and responsive support in our research, Beckman Coulter Life Sciences has enabled the liquid biopsy platform to reach a decisive milestone. Beyond the numbers and protocols, this is a story of trust and collaboration, working toward a shared goal: offering transplant patients safer, more accurate and less invasive monitoring.

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