



The bacteriology laboratory of the Grenoble University Hospital performs the analysis and diagnosis of bacterial infections for the hospital's patients. It also tests new technological approaches for the identification of bacteria and their resistance to antibiotics.  
Work with: [ScanStation 100](#)



### Rapid and automated detection for multi-drug resistant bacteria (MDR) on chromogenic media using the ScanStation 100

- Automation
- Easy to use
- Random Access



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The detection of multi-antibiotic resistant bacteria (MDR) is a major public health issue, especially in our hospitals. As part of his doctoral thesis, Julien Peyroux performed clinical tests on the **ScanStation 100** as a new method for rapid detection of MDR bacteria. Real-time monitoring of colony growth on chromogenic media allows early detection of MDR, crucial for patient management and limiting transmission.

#### MDR, what is it?

Multi-antibiotic resistant bacteria (MDR) is a group of bacteria that, due to the accumulation of **natural and acquired resistance**, are only sensitive to a small number of antibiotics usually used in therapy. With the increasing use of antibiotics, the development of MDR, in the community and in the hospital, is more and more important and leads to **therapeutic impasses**. MDR are involved in various **community and nosocomial infections**. The MDR frequently found in hospitals are **carbapenemase (EPC)** or **extended-spectrum  $\beta$ -Lactamase (ESBL)** producing bacteria and methicillin-resistant *Staphylococcus aureus* (MRSA).

#### The challenges of MDR detection in the coming years

The detection of MDR will become a **major challenge** in the coming years and is the subject of a **national surveillance program in France**. The prevalence of antibiotic resistance is **globally on the rise**, although it varies according to the **resistance mechanisms** involved, and depending on the **country and its health context**. This is mainly due to the fact that **there is no method of rapid detection** allowing to anticipate the implementation of hygiene procedures to limit their transmission. **EPC, MRSA** or vancomycin-resistant **enterococcus** are archetypes of nosocomial diseases. These bacteria are present in certain patients and **can potentially be disseminated from the hospital**. It is therefore the responsibility of hospitals to **limit the dispersion** of MDR within their facilities in order to prevent them from becoming community-acquired (such as ESBL).

*"The challenge is to contain the spread of these resistances so that they don't become a bigger problem than they already are and so that we can still treat MDR in a few years." Mr. Peyroux*

#### The importance of accelerating MDR detection in patient management

Accelerating the detection of MDR allows to move more rapidly to the **treatment of the patient** and the implementation of hygiene measures **to limit their transmission as much as possible**. When an MDR is detected, **isolation measures and specific hygiene protocols** will be put in place for **medical staff and relatives**. In the case of late detection of MDR, a **screening protocol** is established. All **contact cases** from the period considered at risk are called for testing. Knowing that it is estimated that an individual infected with an MDR induces on average **about thirty contact cases per day**, there can be quite quickly **several dozens of persons** to be tested (3 times over 3 weeks), which represents a **significant volume of samples**. Thus, early detection

of MDR **protects patients** from becoming infected and **reduces the workload of hospital staff**. Protocols for

suspicion of MDR infection are now in use. The Grenoble University Hospital systematically tests all multi-hospitalized patients who are about to undergo surgery and who return from abroad.

*"It's important for the hospital to work on limiting the spread of these bacteria because if we don't, there's a point where, as in the case of ESBLs, they will become community-acquired and then the hospital will have much less impact on them. Once it's community-acquired, we're no longer talking about nosocomial disease management within a hospital, but public health management."*

Mr. Peyroux

## What can the ScanStation bring to your daily routine?

**Mr. Peyroux:** "After testing the **ScanStation**, what it could bring us is a reduction in the detection time of MDR on chromogenic agar to quickly switch to confirmatory analyses and get a result as soon as possible thanks to real-time colony counting. Reducing the time of suspicion of MDR infection allows to implement more quickly precautionary measures. So, there is a real interest behind it. Afterwards, there is a need for automation to be followed by the general organization of the laboratory. The **ScanStation** can potentially reduce this analysis time, but it remains a screening method that will allow us to switch more quickly to complementary tests to validate the result."

## Feature you like most about the ScanStation?

**Mr. Peyroux:** "Its automation, its easy to use and Random Access feature. You have all the parameters in advance, you just have to tell it what type of analysis to do at the beginning and once you've done that, you can come and load the device as you go and the analyses start automatically. The Random Access feature is also quite interesting, no need to wait for the 24 hours of analysis to be finished, you can open the **ScanStation** whenever you want to load again other agars and it will resume its work normally. This is quite interesting for a routine laboratory because the samples arrive as they come in, here we don't have to wait for a certain number of samples. We save time on the result delay. It's still very pleasant and it's a great advantage."

## Did you encounter any difficulties?

**Mr. Peyroux:** "We had small problems with the **ScanStation** and each time we made a phone call and we had remote assistance or a person available very quickly to do the work. It's very nice to work under those conditions."

## How would you describe Interscience? How has Interscience helped you?

**Mr. Peyroux:** "We didn't know about Interscience until we did the **ScanStation** tests, and it's a really nice discovery. Everyone is interested, everyone is involved. It's very pleasant to work with a company that closely follows the project with a support that allows us to have a contact person able to answer our questions and provide us with information. Very willing to participate in conferences as well, it was really a research partnership."

*"A company interested in follow-up. When you're doing a study on a machine, it's always nice to have people in front of you who will come and ask how it's going and if they can help in any way."*

Mr. Peyroux