

# DNA Crime Lab Achieves Million Dollar Productivity with STACS DNA

*Small lab increases output equivalent to tripling its staff, even with 25% staff shortage*

## CASE STUDY:

### Miami Valley Regional Crime Lab (MVRCL)

#### Inside:

Decreasing turnaround times and reducing backlogs.....2

Automating is more effective than adding staff.....3

Million dollar cost savings.....3

Documentation time almost eliminated.....3

Preventing errors.....3

Saving time uploading to CODIS.....4

Why MVRCL chose STACS DNA.....4

#### Lab Profile:

- DNA casework lab in Dayton, Ohio
- 4 analysts
- Process 2,500 DNA samples/year
- Previous system: Excel spreadsheets

#### Challenges:

- High backlog
- Slow turnaround time
- Staff on leave

#### Solution: STACS-CW™ Enterprise

- Increase in output: equivalent to tripling lab staff
- 86% increase in samples processed
- 40% savings in total processing cost per sample
- 83% faster turnaround
- 90% faster case documentation
- 90% faster typing profiles into CODIS
- Prevented errors due to transcription and use of expired reagents

For more information about MVRCL:  
<http://www.mcoho.org/government/mvrcl/index.html>

## *Miami Valley Regional Crime Lab (MVRCL)*

**T**he four DNA analysts had a hands-on approach. In a lab where all processing was done manually, it was a must. This was a growing challenge, given that every year the lab faced a steadily increasing caseload.

Each analyst was responsible for processing samples assigned to them, manually moving them through the DNA processing stages of sample setup, serology, batch setup, extraction, quantitation, normalization, amplification and analysis. “Babysitting them,” is how it was characterized by Mark Squibb, the supervisor of the DNA laboratory at Miami Valley Regional Crime Lab (MVRCL).

A spreadsheet was used to track completed cases and the number of samples that were tested in each case, as required for the NJ grant progress report. But Mark knew that technology could be used to increase productivity without increasing headcount.

“I got sick and tired of the backlog and the increased turnaround time,” says Mark. “I wanted the analysts to, in theory, be able to put the samples on the deck and go, and when they get back they are all done.”

### **Decreasing turnaround times and reducing backlogs**

In 2011, Mark put the wheels in motion to automate his lab. In addition to barcoding, he selected Tecan® instrumentation and STACS-CW™ Enterprise software.

“Working the Tecan and STACS® hand-in-hand takes care of a lot of the steps the analysts no longer need to do,” said Mark. “Eliminating or reducing the bottleneck has allowed us to greatly reduce the turnaround time.”

The new system has also had a positive effect on their backlog. In May 2012, it was 100 days. Seven months later, they were basically working samples as they came in the door. “When I have a full workforce, it’s feasible for us to meet a one-month turnaround time, and to eventually reduce that even further.”

This productivity increase was enabled not only by reducing hands-on time, but also by increasing the number of samples being processed in a batch. Whereas a typical batch used to be 50 samples, it is now up to 100 samples. Furthermore, multiple analysts can combine their samples into one batch because STACS can track that level of detail. This means improved instrument utilization, further increasing throughput.

### **Automating is more effective than adding staff**

Mark had the added challenge of having one of his analysts out on extended leave, reducing his staff by 25%. Despite this, productivity still increased.

“We are doubling, sometimes tripling our previous processing rates. So it’s like a double whammy – we are knocking away our backlog more than if we added personnel, because each analyst is only able to handle a certain number of samples.”



### Million dollar cost savings

Reducing hands-on processing time has significantly reduced labor costs. Mark estimates a 40% reduction in total processing costs since implementing STACS and Tecan.

When asked what it would have cost for his lab to match its current case output using their previous manual processes and staff levels, Mark says, "I would have needed to triple my current budget (approximately \$500,000) to get these results. It's the equivalent of saving a million dollars a year."

### Documentation time almost eliminated

Documenting a case on an Excel spreadsheet used to take ten minutes. An analyst would enter the reagent lot numbers or the prep date when the reagent was prepared. Then he or she would save that into each of the case files, a tedious process.

The time to document a case has been reduced by at least 90% since implementing STACS software and barcoding. This saves their lab 250 person hours per year. That's the equivalent to a month and a half of full-time analyst time.

"Documentation is just the click of a barcode," says Mark. "If I have five reagents I need to hit for each processing step, within two or three seconds, I can get them all and be on my way. I consider that negligible."

With STACS-CW Enterprise, they can now save the batch history report PDF into each of the case files. This has played a big part in reducing the time required for documenting each case.

"Case documentation-wise, that is a big leap," says Mark. "We now do very little manual preparing of case documentation as most of it is done with STACS. We do add in a little bit but not too much."

"Now we can spend time screening evidence for the next DNA batch."

### Preventing errors

Manually processing samples can be tedious, and mental fatigue can set in, leading to human error. STACS and automation has helped prevent errors in two ways.

"It takes out the potential of human error such as transcription errors. Writing down things incorrectly is now eliminated. It has definitely helped out a lot," says Mark.

In addition, analysts are prevented from using an expired reagent. Continues Mark, "Without STACS, there is a potential that this could happen."

Analysts still need to be vigilant, warns Mark. Even though STACS makes their lives easier, they still need to follow the correct procedures and quality assurance processes.

### Saving time uploading to CODIS

The process of typing profiles into CODIS has also been simplified by STACS. This used to take lab staff several hours per month.

According to Mark, "If it takes two hours to type in, say, 20 profiles, now I can create one XML file and import

those 20 samples into CODIS within 30 seconds. That means I have two free hours to do whatever, write up reports, go screen evidence, you name it. So that is a big one and it really does help out a lot. And that again will eliminate transcription errors and mistakes being entered into CODIS. So it is pretty handy; I love that feature!"

### Why MVRCL chose STACS DNA

Here is how Mark describes STACS-CW Enterprise in his lab:

"STACS interweaves everything together. It allows me to work along the entire DNA processing chain, and open and close any other software, run an instrument that I need, as well as compile my casework documentation. It even has other features for consumable management, instrument management, a lot of nice extra features associated with that. A lot of good features that are not in the manual processing methods of a typical DNA section crime lab."

*"It's the equivalent of saving a million dollars a year."*

*"We are doubling, sometimes tripling our previous processing rates."*

*"It's like a double whammy – we are knocking away our backlog more than if we added personnel."*

*"It removes one giant bottleneck in the whole process."*

*"Implementing STACS was a pretty important step in the efficiency of case processing of the DNA section."*

*"STACS interweaves everything together."*

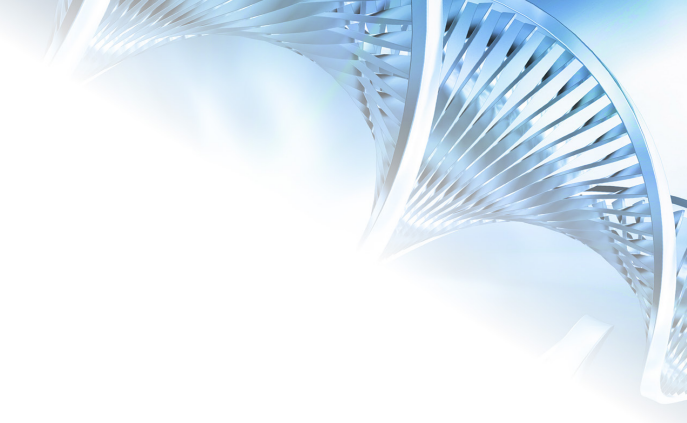
*"It's a solid product."*

*"It does everything I need."*

*"Now I can ... import those 20 samples into CODIS within 30 seconds. That means I have two free hours ... it is pretty handy; I love that feature!"*

Mark continues: "I can come in here and just perform DNA processing rather easily since it's all automated, and all of the data is automatically compiled. I can run a report for a particular case or a batch, save that to a PDF and attach that to my case file, which is all electronic. It removes one giant bottleneck in the whole process. Implementing STACS was a pretty important step in the efficiency of case processing of the DNA section."

When asked why he chose to work with STACS DNA as a vendor, Mark's response is: "From what I have seen, the other software are very rigid, they are not as open to customization. Other vendors told me, 'No, it's not set up that way. You can't do that.' They don't seem to care what the customer wants. It is just easier to deal with STACS people because they genuinely care about what my issue is, understanding it, implementing it—or at least seeing it into the next build. It is a nice relationship."



*STACS DNA delivers the only sample management software designed specifically for DNA labs. Since 2000, we've helped DNA database and casework labs accelerate throughput, prevent errors, cut costs, improve data quality and meet accreditation standards. The FBI, RCMP, U.S. Army and DNA labs of all sizes rely on STACS DNA.*

*Why are we called STACS DNA? "Sample Tracking and Control Systems" for DNA—What we do is in our name!*

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