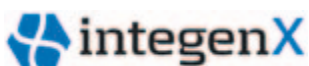


# Automated microfluidic technology – from macro to micro

IntegenX designs, manufactures and markets automated systems for reliable microsample preparation and analysis, and has chosen the Tecan Cavro® Mini Sample Processor (MSP) to automate its microfluidic technology.



IntegenX, Inc., based in California, USA, was historically primarily involved in contract research projects using microfluidic technology and, over the last five years, has developed a very good understanding of the marketplace. With the direction the sequencing market was taking, the Company decided to develop an instrument that would allow them to commercialize both their technology and an automated product.

James Nelson, Marketing Director at IntegenX, explained: “With Sanger sequencing, the major ‘pain point’ is the expense of the Big Dye®, XTerminator® and magnetic bead reagents for clean-up. Although ethanol clean-up is much cheaper, this technique is both tedious and time consuming. In comparison, automation drastically reduces the reagent volumes required for efficient clean-up, meaning that the initial outlay for an automation product is more than offset by the substantial reagent cost savings generated.”

“Typically sample volumes are in millilitres – the ‘macro world’ – and must be interfaced to a microfluidic system that handles microlitres, which is where our expertise lies. We needed to transfer samples from macro to micro, and for that we required a robotic system that was highly reliable and robust, with a great reputation. Tecan was a name our customers knew and trusted, and they had a product that matched our needs really well. The Cavro MSP 9250, equipped with an eight-channel probe assembly and stainless steel tips, was very straightforward to integrate into our system, Apollo 100. Tecan provided all the technical support we needed and the documentation

provided with the liquid handler was more than adequate to enable us to take control of the platform through our Apollo Control Software.”

James continued: “When we receive each Cavro MSP 9250, we build onto its work deck, adding a section to accommodate samples – which arrive in microplates – reagents and product plates, and our microfluidic station, where up to four MOVE™ microfluidic chips can be mounted. The MOVE technology includes built-in thermocyclers, for automated Sanger sequencing, and a series of microfluidic valves configured to act as a pump, controlling the direction of flow and pumping reagents around the microchip for magnetic bead clean-up. Prepared samples are then transferred into the product plate, ready for the user to just place in the sequencer.”

“Currently the Apollo 100 is the only product on the market dedicated to sample preparation for Sanger sequencing. It can run 96 samples at a time, with full walkaway automation, freeing staff time for other tasks and eliminating potential human errors that could lead to expensive repeat runs. The small reaction volumes of approximately 1 µl decrease the amount of precious sample that is required, significantly reducing the amount of Big Dye and magnetic beads used and substantially lowering the cost per sample. The complete cycle takes four hours, including a 30 minute chip cleaning procedure at the end of the cycle, allowing the user to process two plates a day. Throughput can be further increased, compared to a manual method, by running a third plate overnight. The Apollo 100 will



The Apollo 100 team at IntegenX: (left to right) Bill Metz, Mike Recknor, Chris Beite, David Wyrick, Roger McIntosh and James Nelson

layer mineral oil on top of the plate, keeping it completely stable and ready to be placed in the sequencer in the morning. This is a big advantage when urgent samples are received too late in the day to be processed manually.”

James concluded: “At the moment Apollo 100 is only available in the US, but we will probably go global shortly. We have another product due out in the autumn which uses the same robotic platform and we are looking at other Tecan systems for additional applications – potentially next generation sequencing – in the future.”

For more information on IntegenX, Inc., visit [www.integenx.com](http://www.integenx.com)

To find out more about Tecan’s Cavro MSP, visit [www.tecan.com/components](http://www.tecan.com/components)

Big Dye and XTerminator are registered trademarks of Life Technologies, Inc.

MOVE is a trademark of IntegenX, Inc.