

Fully automated ELISA testing in veterinary diagnostics

The Institut Galli-Valerio in Lausanne, Switzerland, has chosen a Freedom EVO® platform to fully automate all ELISAs for the Swiss authorities' ambitious program to eradicate bovine virus diarrhea virus (BVDV), which can cause mucosal disease in cattle.

The Institut Galli-Valerio is the veterinary diagnostic laboratory of the canton of Vaud, Switzerland, offering a broad range of diagnostic tests for infectious diseases of domestic and wild animals. The institute's routine BVDV testing forms part of the Swiss authorities' ongoing program to rapidly eliminate BVDV from the domestic cattle population.

The IDEXX HerdChek* BVDV Antigen/Serum Plus ELISA was chosen for BVDV testing, offering high diagnostic sensitivity and specificity for reliable detection of persistently infected (PI) animals. In the initial phase, all cattle were individually tested to identify and slaughter PI animals. Since the beginning of 2009, all newborn calves are being tested using ear notch

samples taken as part of the regular tagging process. The resulting need for reliable high throughput screening has been met using a Tecan Freedom EVO liquid handling workstation to fully automate all ELISA testing.

The Freedom EVO 150 platform is equipped with an 8-channel liquid handling arm using fixed ceramic tips, a robotic manipulator arm, shelves and incubators. A Sunrise™ absorbance reader and a Power Washer 384™ plate washer (using a 96-channel head) have been integrated onto the side of the platform. Tecan has also designed a special carrier to allow sample racks containing ear notch samples to be installed on the worktable. This platform has a maximum throughput of 26 plates per day for BVDV.





The Freedom EVO platform at the Institut Galli-Valerio

In addition to BVDV testing, the laboratory performs a range of other ELISA tests from IDEXX Laboratories using the Freedom EVO workstation, including infectious bovine rhinotracheitis (IBR), brucellosis, enzootic bovine leukosis (EBL) and caprine arthritis encephalitis (CAE), as well as an in-house ELISA for *Salmonella abortus-ovis*. Close cooperation with IDEXX Laboratories has allowed fast and efficient transfer and validation of all ELISA tests on the fully automated system. The flexibility of the Freedom EVO platform has allowed the laboratory to cope with the demanding sample numbers of the Swiss BVDV eradication program.

Acknowledgements

We would like to thank Dr Belloy and Dr Waldvogel at the Institut Galli-Valerio in Lausanne, Switzerland, for sharing their expertise using the Tecan Freedom EVO platform and IDEXX Laboratories for the development of customized error handling and tracking, and for setting up applications in Freedom EVOware® for the complete portfolio of IDEXX ELISA tests performed at the institute.

* HerdChek is a trademark or registered trademarks of IDEXX Laboratories, Inc. in the United States and/or other countries.



Siegfried Sasshofer, Head of Sales & Marketing at Tecan Austria

Leading the debate

In case you hadn't yet realized, 2010 is Tecan's 30th birthday! 30 fast-moving years in the life science and clinical arenas, and 30 ground-breaking years of continuing innovation in laboratory automation.

For the detection business unit, major innovation began in earnest in the late 90s with multimode readers and, soon after, technology took another big step forward with the introduction of high-level monochromator systems. A completely modular approach to reader technology, complete with an upgrade path, has improved flexibility, giving customers the option to define the product they want now and in the future.

So what's next? Where will innovation take us in the next 30 years?

The early signs suggest that, for basic research, convenience and ease-of-use at a low cost will remain paramount. We will continue to focus on keeping our software as simple as possible yet still as powerful as necessary. Just a simple issue like language can make all the difference to a laboratory user; however good your English, an instrument or software that talks your language makes life so much simpler.

For more advanced applications in academia and industry, two main factors are coming to the fore. The first is multiplex assays; the importance of getting more information out of just one assay, saving samples, reagents, costs and time. Microarrays are a perfect example of one investigation giving literally thousands of data points. The second is relevance; knowledge has passed the limits of biochemical assays and researchers now need to work on a higher biological level, on cells or tissue etc. Cell-based assays are becoming more relevant and as new methods and technologies bury into deeper levels of understanding, users will demand high performance instruments.

Whatever happens, in these or other methodologies, the common factor stays the same; the key is to stay close to laboratory users, allowing them to drive innovation according to what they need in their applications.

Email talk@tecan.com to tell us what you think about the direction of innovation or any other life science topic of your choice.