



Animal import/export testing

Routine ELISA testing with the Freedom EVOlyzer®

Introduction

The Entry-Exit Inspection and Quarantine Bureau (CIQ) for Tianjin, China, is responsible for monitoring import and export of commodities, foodstuffs, plants and animals throughout the municipal area of the city of Tianjin. Founded in 2001, the CIQ's Animal, Plant and Foodstuffs Inspection Center conducts a broad range of Entry-Exit monitoring activities, from pesticide residue detection in crops to pre- and post-quarantine testing for large animals. The Center's Animal Disease Detection Laboratory (ADDL) is one of seven laboratories which carry out this screening, testing animals entering or leaving China via the municipality's ports for the presence of infectious diseases. This includes a wide variety of livestock – from chickens and ducks, to pigs and cattle – and results in a workload of almost 50,000 tests a year.

In 2008, the ADDL decided to automate ELISA processing on a Tecan Freedom EVOlyzer due to their increasing daily test demands. The main implementation criteria for a fully automated ELISA system were precision and reliability,

throughput, flexibility and provision of the longest possible walk away times. Tecan's Freedom EVOlyzer met all these requirements, fulfilled the stringent testing requirements of the laboratory's broad spectrum of ELISA assays, and has the capacity to increase sample throughput when necessary

Procedure

The laboratory's Freedom EVOlyzer 150 is equipped with an eight-channel liquid handling (LiHa) arm with eight standard fixed tips, a robotic manipulator (RoMa) arm for plate transportation, a PosID™ barcode scanner, heated and room temperature incubators, a HydroFlex™ plate washer and a Sunrise™ absorbance reader, all controlled by Tecan's Freedom EVOlution™ software.

The worktable is divided into sample loading, ELISA preparation and reagent storage areas, allowing up to 96 samples to be loaded at a time. Active grid control supports continuous loading of samples during the ELISA process, and

all required reagents, including decontamination solutions, can be preloaded. The test set-up area contains three microplate carriers, allowing processing of up to nine reaction plates in parallel (Figure 1).

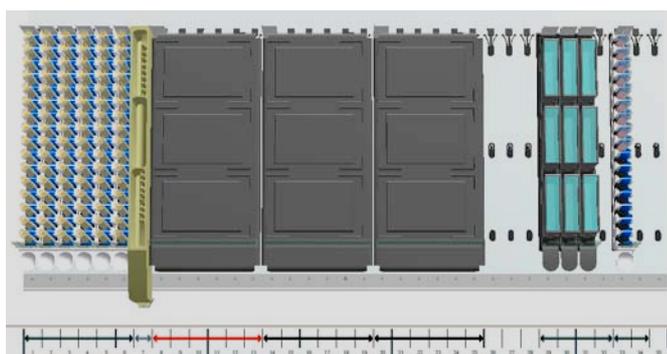


Figure 1. Wortable layout of the Freedom EVOlyzer at the ADDL.

The laboratory’s standard operating procedures (SOPs) for manual testing have been transferred onto the Freedom EVOlyzer. Around 440 samples are processed on a typical work day. The required tests differ from sample to sample, but on average, five or six tests are performed per sample. Fresh or frozen serum samples are received by the laboratory in barcoded sample tubes, identified by the PosID scanner and then pipetted directly onto microplates in the ELISA processing area of the platform (Figure 2). Serum samples are stored in a refrigerator between tests, and are discarded once testing is complete.

The ADDL’s Freedom EVOlyzer is used to completely automate up to 30,000 tests a year – over half of the laboratory’s total testing workload – and has the option to extend this capacity as new ELISA assays become available.

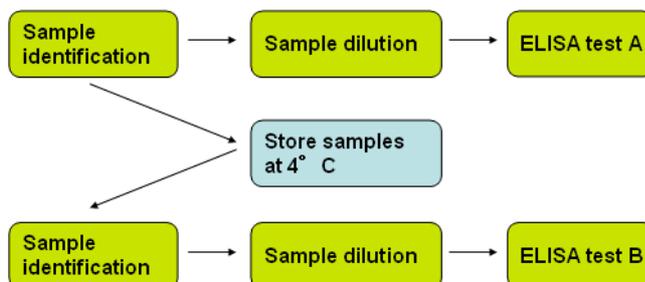


Figure 2. Sample workflow at the ADDL. Typically 5 to 6 tests are performed per sample.

The parallel sample distribution capabilities of the Freedom EVOlyzer allow all the required tests for each sample to be performed in parallel, and the ADDL will look to implement multiple tests per run as their sample intake grows, increasing throughput and reducing the need for refrigerated sample storage.

Customer statement

Miss Xiao Yan from ADDL, commented: “Overall we are very happy with the Freedom EVOlyzer, which is extremely reliable and produces excellent results. It saves us significant time, and gives us more confidence in the results we obtain. We are also happy with the service and support we have received since purchasing the system.”

Acknowledgements

We would like to thank Mrs Wang Yulin, Vice Section Chief, and Miss Xiao Yan of the Animal Disease Detection Laboratory (ADDL) for sharing their expertise in routine ELISA testing with the Freedom EVOlyzer.

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