

Fungal detection accelerated

Chinese IVD company Dynamiker has developed a range of rapid diagnostic kits to help address the rising problem of invasive fungal diseases in hospitals. Offering results in under two hours, these colorimetric and ELISA assays are designed to address the problems associated with traditional diagnostic techniques – poor sensitivity and slow turnaround times – allowing earlier implementation of antifungal treatments for better patient outcomes.



Dynamiker Biotechnology is an *in vitro* diagnostics kit manufacturer based in Tianjin, China. Founded in early 2014, the company focuses on the development of immunodiagnostic assays for the rapid, early detection of invasive fungal diseases (IFDs). Jeffrey Lau, International Sales Manager at Dynamiker, explained: “We specialize in the development and production of IVD assay kits for the detection of the three main IFD-causing fungi: *Aspergillus*, *Candida* and *Cryptococcus*. IFDs commonly cause disease in immunocompromised patients, and can be particularly problematic in the intensive care and respiratory wards of hospitals, where patients with primary pulmonary infections or HIV are susceptible to secondary infections. Characterized by very high mortality rates – sometimes 40 to 50 % – the major challenge of combatting IFDs is that most traditional diagnostic methods – culture, microscopy and biopsy – are either not sensitive enough or take a lot of time to get results. Our product range is designed to address this issue, providing positive pathogen identification within just two hours and enabling antifungal treatment to be started as soon as possible.”

Jeffrey continued: “We offer a range of immunodiagnostic assay kits allowing the detection of both fungal antigens and specific antibodies for *Aspergillus*, *Candida* and *Cryptococcus*, representing the most comprehensive range on the market. Working with serum, cerebrospinal fluid (CSF) or broncho-alveolar lavage (BAL) samples, our customers can perform a microplate-based ‘panel’ test to rapidly determine the causative agent of an infection, getting accurate diagnostic results to clinicians as quickly as possible and allowing targeted treatment to begin.”

“A majority of our assays are based on colorimetric and ELISA technology, making sensitive and reliable detection of changes in the optical density (OD) of the reaction vital to ensure accurate results. Although most hospital laboratories already have microplate absorbance readers, the performance of these instruments is often not good enough to provide reliable results in a clinical context. We tested a number of instruments, and Tecan’s Sunrise™ offered the best performance, which is why we have decided to recommend this reader to all our customers. We have already installed over 60 Sunrise readers in

clinical laboratories across China, and are expecting this number to rise to between 100 and 150 this year alone.”

In addition to the genus-specific product range, Dynamiker also offers a quantitative fungal infection assay based on the presence of the fungal biomarker (1-3)- β -D-glucan, which is widely present in fungal cell walls. This kinetic assay is based on the binding of the glucan to a proprietary reagent, which activates a serine protease zymogen and causes a change in the OD. The Sunrise reader’s advanced temperature control – which heats the microplate from both the top and the bottom – ensures consistent assay performance. Jeffrey commented: “Thanks to its very uniform temperature control across the entire microplate, the Sunrise offers very good results for this assay, and has effectively eliminated edge effects. This is a huge advantage, providing more reproducible results and allowing customers to use every well of a plate, reducing the overall cost of testing. In addition, the Tecan China team helped us to develop a protocol to simplify the analysis of this assay using Magellan™ software, which has made our customers very happy.”

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“As all our assays are performed in an automation-friendly 96-well microplate format, we have also begun evaluating the performance of our kits on the Freedom EVOlyzer® platform for large hospital laboratories. This fully-automated workstation offers walkaway ELISA processing, using the same Sunrise reader and an integrated plate washer, providing the ideal solution when sample numbers are too high for manual processing. The system also has an eight-channel pipetting arm, which is a real advantage for kinetic assays, minimizing the amount of time required for pipetting operations. Although our major market is currently in China, we are expanding towards Europe, the Middle East and Southeast Asia, and the greater reproducibility and process security offered by automation will be a real advantage for approval of our IVD kits in these new markets,” Jeffrey concluded.

To find out more about Tecan’s Sunrise reader, visit www.tecan.com/sunrise

To learn more about the Dynamiker range of fungal diagnostic products, go to www.dynamiker.com



The reader software makes it quick and easy to set up and run Dynamiker’s assays



Dynamiker’s assays are designed to provide positive pathogen identification within just two hours



Local support is vital to the success of clinical diagnostic testing