

The Evolution of Molecular Diagnostics

Detecting – and deterring – the next pandemic.

The COVID-19 pandemic has heightened public awareness about molecular diagnostics. While PCR testing has been the cornerstone of molecular diagnostics for years, there are a wide variety of molecular diagnostic solutions that provide faster results than traditional PCR-based methods. However, these solutions may not provide the same level of reliability and accuracy as PCR tests which analyze the presence of the actual virus' genetic material with high sensitivity and are the most effective means of detecting active infection.

“When sick patients come in the hospital, you want the most sensitive test, and that’s a PCR test,” said Dr. Dave Persing, Chief Medical and Technology Officer for Cepheid, a molecular diagnostics company based in Sunnyvale, Calif. “You don’t want to miss a case and then find out later that the patient is positive for COVID-19. Having a sensitive test at admission is important.”

Dr. Persing continues, “In the past, molecular testing made sacrifices in sensitivity and performance in exchange for speed. But today, Cepheid’s combination of best-in-class laboratory quality accuracy along with speed is unique.”

Additionally, Cepheid has a long and storied role in the evolution of molecular diagnostics in responding to global public health threats and emergencies over past two decades including anthrax in 2001, H1N1 influenza in 2009, Ebola in 2014, and Covid-19 in 2020.

“We were engaged early on after the anthrax scare to build a test cartridge that could test the mail for anthrax,” Dr. Persing explained. “In 2009, we built a test for H1N1 influenza and in 2014, we built a test for Ebola.”

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Today, Cepheid’s Xpert® Xpress CoV-2/Flu/RSV *plus* (“4-plex *plus*”) PCR test provides actionable, rapid respiratory results to meet the challenges of the ongoing COVID-19 pandemic. It rapidly detects the presence of the SARS-CoV-2 virus, including emerging variants. In addition, it detects and differentiates between Influenza A, Influenza B, RSV and SARS-CoV-2 viruses, as well as identifying potential co-infections during the respiratory season.

“You want to know if the patient is eligible for an antiviral or if they need isolation,” said Dr. Persing. “How they are managed after admission is dependent on getting an accurate result.”

Cepheid’s 4-plex *plus* test is a single cartridge with an easy-to-use workflow, optimizing utilization of limited resources in healthcare settings.

Dr. Persing states, “Looking at the entire workflow – from sample collection to testing – is an important perspective for healthcare supply chain professionals to maintain.”

“Consider the versatility of the platform,” said Dr. Persing.

Dr. Persing says responding to the next potential pandemic is ideally based on a system already in place in hospital settings. “It’s important to build in a future proofed capability, enabling us to detect things that may not be on our radar yet and our 4-plex *plus* test already has the built-in capability of scalability and broad range detection of the respiratory viruses.” ■