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The impact of mutation panels in diagnostic testing

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Adoption of innovative testing strategies like mutation panels will enable government and healthcare bodies to not only manage the pandemic but also empower laboratories to abet such outbreaks in the future



Mutations are the norm for viruses. High mutation rates in response to selective pressure are especially common in RNA viruses. Throughout the COVID-19 pandemic, SARS-CoV-2 has been mutating at a rate of about one to two mutations per month. According to World Health Organization (WHO), COVID -19 weekly epidemiological update as of June 2021, the cases of COVID-19's Delta variant has been reported in over 100 countries with a potential to become dominant in the coming months.
With more and more variants emerging, it is imperative to study virus mutation and take adequate measures to identify and curb its transmission. An accurate understanding and detection of the mutations will enable healthcare bodies and the government to establish robust mechanisms to mitigate the pandemic effectively.

The significance of mutation panels
The rapid accumulation of mutations has raised concerns about the impact of the SARS-CoV-2 virus and the new variants it might have. Knowing how common it is for viruses to mutate, Thermo Fisher Scientific has designed COVID-19 molecular diagnostic tests in a multiplex manner. This means we have our assays target multiple areas in the SARS-CoV-2 genome. This built-in redundancy helps provide confidence in our tests to identify COVID-19 positive patients even when mutations in the genome arise.

As the SARS-CoV-2 virus continues to evolve, some variants have potentially impacted the efficacy of treatments and vaccines. The TaqMan SARS-CoV-2 Mutation Panel is designed to be highly scalable, and able to run a few or hundreds of samples in about an hour. Further, the mutation panel is based on gold standard TaqMan SNP genotyping assay technology, which can help detect and distinguish mutations efficiently, including the recent Delta variants. The panel provides laboratories with the ability to meet various levels of testing needs with real-time PCR instruments already in use, significantly reducing the cost of running these assays.

Having up to date, reliable and accurate information is critical in fighting back. With this panel, we are empowering researchers and clinicians by placing another tool that can monitor changes in the virus and enable them to make informed and effective decisions that can benefit society at large.

Further, the panels serve as a reliable tool to enable surveillance of variants that are causing Covid-19 infections in specific regions. This will also allow laboratories to custom build their panel to identify relevant SARS-Cov-2 mutations, as well as to adapt quickly as new variants emerge.

Looking forward, reliable mutation panels will play a significant role in creating a genomic database that can enhance genomic surveillance, limiting the spread of the virus. Overall, there is a rising need to decipher the mutation patterns and the adoption of innovative testing strategies like mutation panels, will enable government and healthcare bodies to not only manage the pandemic but also empower laboratories to abet such outbreaks in the future.