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How mutation panels can help track the rapid spread of COVID-19 variants

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Viruses constantly evolve and change through mutation. In February 2021, IANS reported that the genetic laboratories in India have detected over 24,000 mutations in the strains of the SARS-CoV-2 virus in the last year

To act effectively against a virus, it is important to monitor the changes in the virus, to understand how the virus is spreading, and how it can be prevented from replicating further. Studying these variants is also important as it can potentially impact the effectiveness of the vaccines or the drugs that are being used to minimize the effect of the virus. The understanding of the evolving mutations enable healthcare bodies and government, to take effective measures to curb the spread and offer effective treatment plans to mitigate the pandemic effectively.

The critical role of mutation panels

The rapid accumulation of mutations has raised concerns about the impact the SARS-CoV-2 virus and the new variants it might have. For example, some variants seem to be more transmissible, while others are seemingly able to evade vaccine or are less susceptible to therapeutics. In such scenarios, a mutation panel can prove to be an invaluable tool in the hands of researchers and scientists. The mutation panel must be designed to provide laboratories with the ability to meet various levels of testing needs, while being highly scalable and efficient to identify one or many mutations.

At Thermo Fisher, we have developed a new panel based on TaqMan technology that our customers can use as a response solution to identify mutations in their SARS-CoV-2 samples. The Applied Biosystems™ TaqMan® SARS-CoV-2 Mutation Panels have a customizable menu of 22 verified real-time PCR assays for identification of COVID-19 mutations. These assays can enable surveillance of variants that are causing Covid-19 infections in specific regions and allow laboratories to choose which mutations to track. The efficient mutation panel allows healthcare institutions and laboratories to custom build their own panel to identify the current relevant SARS-Cov-2 mutation and adapt quickly as new variants emerge. The TaqMan mutation panels provide accurate and quick results in an hour's time, allowing testing of multiple samples. This is significantly advantageous than any other comparable technology, which takes a minimum two or three days. The mutation panels also provide laboratories with the ability to meet various levels of testing needs with real-time PCR instruments they already use, significantly reducing the cost of running these assays.

In addition, the reliable mutation panels will also play a significant role in creating a genomic database that can be used to enhance genomic surveillance, thereby limiting the spread of the virus.

Looking forward, to combat the COVID-19 pandemic effectively, researchers need a better understanding of the biology of the SARS-Cov-2 at the molecular level, and usage of tools like mutation panels provide valuable insights to predict the impact of its transmission and virulence. Overall, these tools will play a vital role in empowering laboratories and government bodies to make informed and effective measures and be better prepared for the challenges ahead.