



SARS-CoV-2 Variants are Detected By Norgen Biotek Detection kits (E/RdRP genes & N1, N2, genes)

Updated 03/24/21

A variant analysis was completed for the following kits:

1. **2019-nCoV TaqMan RT-PCR Kit (TM67100, TM67120)**
2. **2019-nCoV Taqman RT-PCR Kit Dx (DxTM67100, DxTM67120)**
3. **COVID-19 TaqMan RT-PCR Kit (E/RdRP genes) (TM67200, TM67240)**
4. **COVID-19 TaqMan RT-PCR Kit (E/RdRP genes) Dx (DxTM67200)**

The analysis illustrates that the designed primers and probes can target the 3 new variants of SARS-CoV-2. The alignment scores for the **2019-nCoV TaqMan RT-PCR Kit** to the variants can be seen in table 1, which shows that the alignment of primers & probes is identical between variants as well as the initial SARS-CoV-2 Wuhan strain.

The alignment scores for the **COVID-19 TaqMan RT-PCR Kit (E/RdRP genes)** to the variants can be seen in table 2, which shows that the E gene assay has a 100% alignment to the variants and the initial SARS-CoV-2 Wuhan strain. For the RdRP assay, the RdRP forward and probe 2 align 100%, the RdRP reverse aligns with 1 mismatch, and the RdRP probe 1 has a 0% alignment, these results follow the kit design as the RdRP probe 1 is meant to be universal for all SARS viruses.

		Alignment Score					
Primer		England Variant EPI_ISL_581117	Brazil Variant EPI_ISL_792680	South Africa Variant EPI_ISL_678597	Nigeria Variant EPI_ISL_1168768	California Variant EPI_ISL_1335868	SARS-CoV-2 Wuhan-Hu-1 NC_045512.2
N1 Gene	2019-nCoV_N1-Forward	100%	100%	100%	100%	100%	100%
	2019-nCoV_N1-Reverse	100%	100%	100%	100%	100%	100%
	2019-nCoV_N1-Probe	100%	100%	100%	100%	100%	100%
N2 Gene	2019-nCoV_N2-Forward	100%	100%	100%	100%	100%	100%
	2019-nCoV_N2-Reverse	100%	100%	100%	100%	100%	100%
	2019-nCoV_N2-Probe	100%	100%	100%	100%	100%	100%

Table 1: The variant alignment score for the 2019-nCoV TaqMan RT-PCR Kit primers and probes for N1 and N2 gene.

		Alignment Score					
Primer		England Variant EPI_ISL_581117	Brazil Variant EPI_ISL_792680	South Africa Variant EPI_ISL_678597	Nigeria Variant EPI_ISL_1168768	California Variant EPI_ISL_1335868	SARS-CoV-2 Wuhan-Hu-1 NC_045512.2
RdRP Gene	RdRP_Forward	100%	100%	100%	100%	100%	100%
	RdRP_Reverse	96%	96%	96%	96%	96%	96%
	RdRP_Probe 1	0%	0%	0%	0%	0%	0%
	RdRP_Probe 2	100%	100%	100%	100%	100%	100%
E Gene	E_Sarbeco_Forward	100%	100%	100%	100%	100%	100%
	E_Sarbeco_Reverse	100%	100%	100%	100%	100%	100%
	E_Sarbeco_Probe	100%	100%	100%	100%	100%	100%

Table 2: The variant alignment score for the COVID-19 TaqMan RT-PCR Kit (E/RdRP genes) primers and probes for RdRP and E gene.

Norgen is closely monitoring upcoming variants and we will notify our customers if there are any changes in the capacity for detecting new variants.