

# Validation of the targeted TaqMan™ SARS-CoV-2 Mutation Panel for identification of SARS-CoV-2 variants of concern or interest



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## Background

Since the start of the SARS-CoV-2 pandemic, multiple clinically relevant mutations (E484K, N501Y) within the S protein emerged that increased virus transmissibility.

In the alpine region of Austria and Italy, in early 2021, the dominant strain (B.1.258) was rapidly replaced by the B.1.1.7 variant which harbours the N501Y mutation.

The pandemic became aggravated by antibody escaping mutations, like E484K, present in the Variant of Concern/Variant of Interest (VOC/VOI) B.1.351, P.1 and B.1.525.

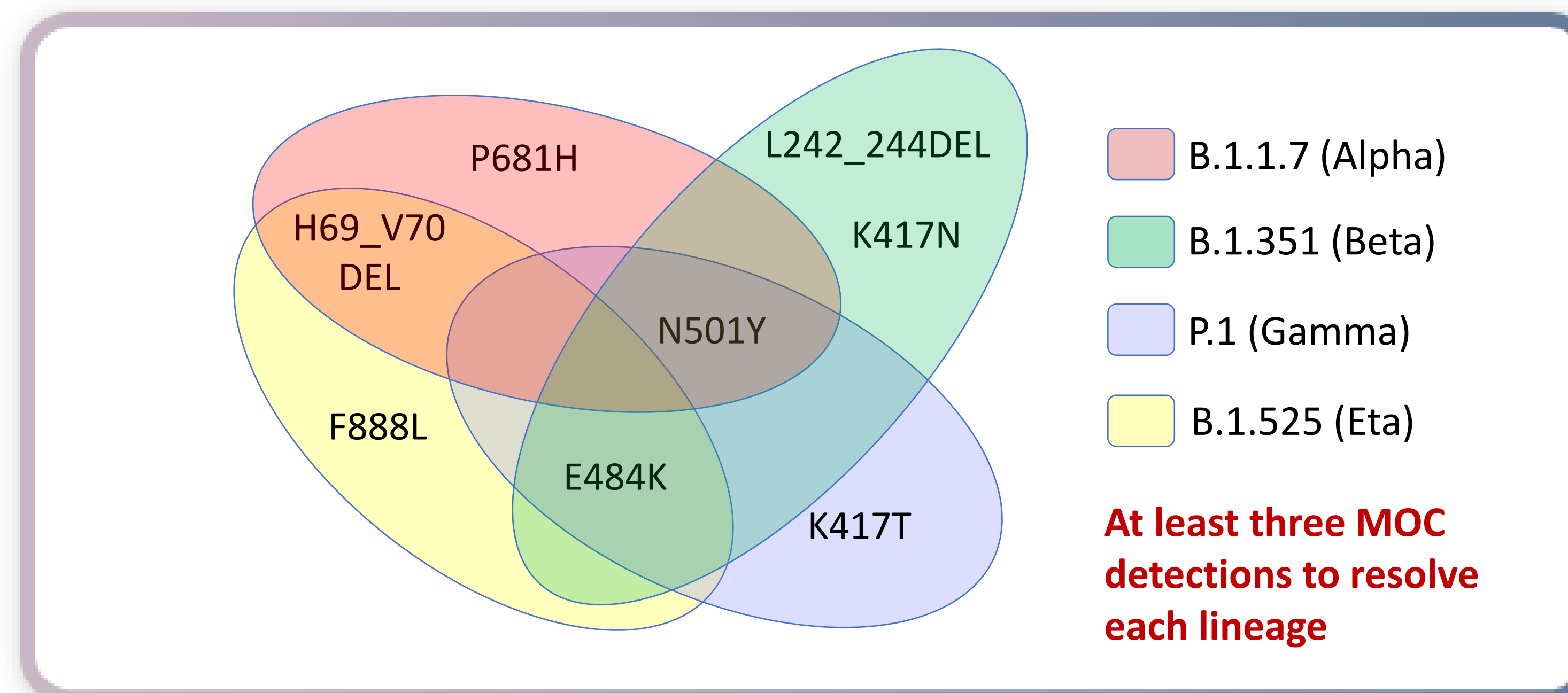
Standard identification of VOC/VOI and SARS-CoV-2 strain is done by whole genome sequencing (WGS), a process that requires 3 or more days.

## Goal

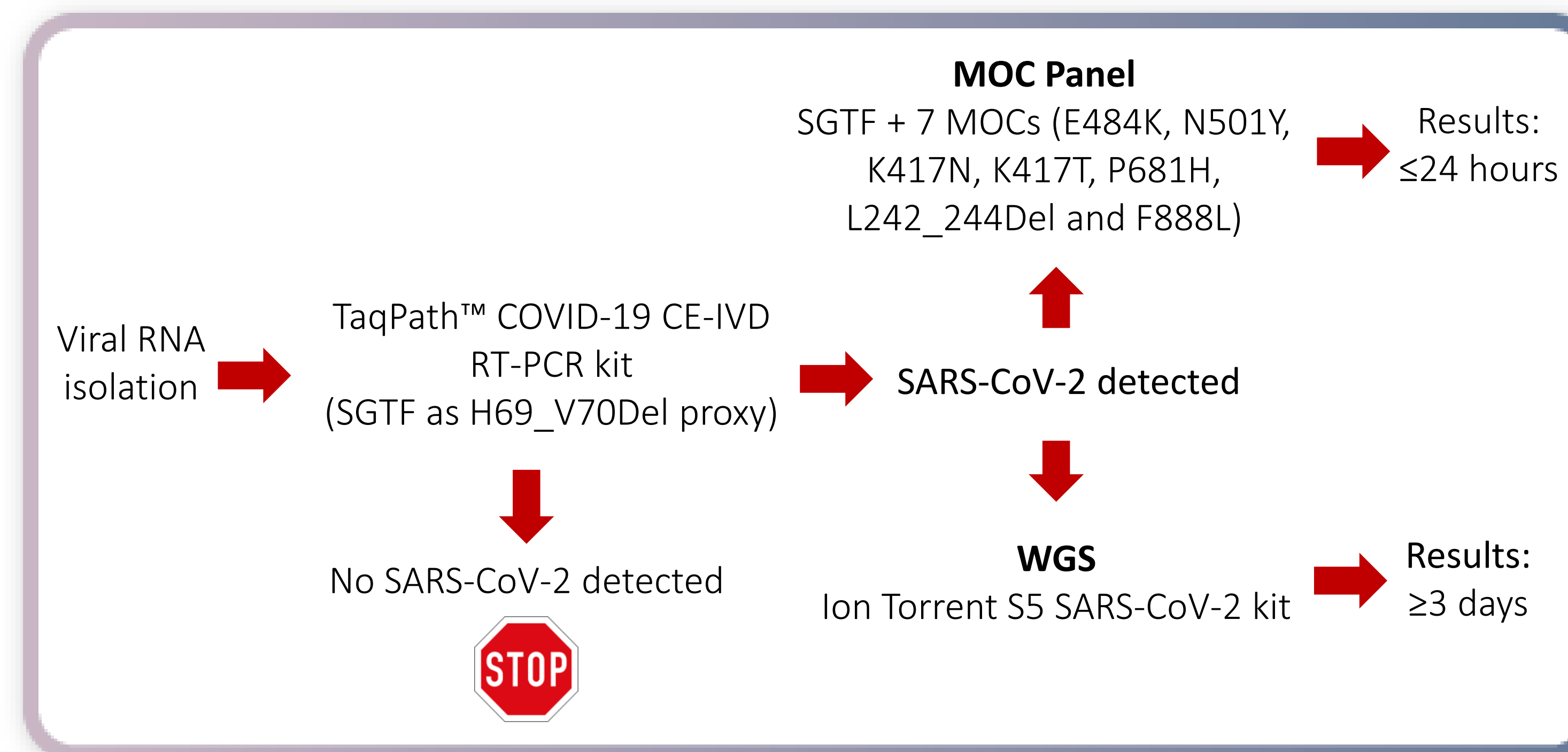
Identify a Mutation of Concern (MOC) panel with built-in redundancy for VOC/VOI identification

Evaluate a workflow for VOC/VOI identification that takes less than 24 hours (as opposed to whole genome sequencing) so as to allow swift reactions from the public healthcare system.

## Methods



**Figure 1.** Mutations of Concern (MOC). 7 MOCs were chosen according to the VOC/VOI circulating in the area and used in combination to resolve each lineage. As a proxy for the H69\_V70Del mutation, the S gene target failure (SGTF) on the TaqPath CE-IVD kit was used.



**Figure 2.** VOC/VOI identification workflow. 99 SARS-CoV-2 positive samples naso- and oropharyngeal samples were analysed using the TaqPath™ COVID-CE-IVD RT-PCR kit and were chosen for a paired analysis using WGS and MOC panel.

## Results

**SARS-CoV-2 lineages identified in the alpine region of Austria and Italy (January – March 2021)**

WGS		MOC Panel	
B.1.1.7 (Alpha)	59	B.1.1.7 (Alpha)	59
B.1.351 (Beta)	2	B.1.351 (Beta)	2
P.1 (Gamma)	3	P.1 (Gamma)	3
B.1.525 (Eta)	3	B.1.525 (Eta)	3
B.1.177	4	Other Lineages	32
B.1.258	27		
B.1.1.127	1		
<b>Total determined</b>	<b>99</b>	<b>Total determined</b>	<b>99</b>

**Table 1.** Paired analysis showed 100% agreement between the MOC panel and WGS.

## Conclusions

