



## Archived Editions (COVID-19 Genomics and Precision Public Health Weekly Update)

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### COVID-19 Genomics and Precision Public Health Weekly Update Content

- Pathogen and Human Genomics Studies
- Non-Genomics Precision Health Studies
- News, Reviews and Commentaries

#### Pathogen and Human Genomics Studies

- Genomic epidemiology reveals multiple introductions of SARS-CoV-2 from mainland Europe into Scotland. (</PHGKB/phgHome.action?action=forward&dbsource=covUpdate&id=522>)  
da Silva Filipe Ana et al. Nature microbiology 2021 Jan (1) 112-122

We aimed to identify the source and number of introductions of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) into Scotland using a combined phylogenetic and epidemiological approach. Sequencing of 1,314 SARS-CoV-2 viral genomes from available patient samples enabled us to estimate that SARS-CoV-2 was introduced to Scotland on at least 283 occasions during February and March 2020. Epidemiological analysis confirmed that early introductions of SARS-CoV-2 originated from mainland Europe (the majority from Italy and Spain).

- HLA-C\* 04:01 is a Genetic Risk Allele for Severe Course of COVID-19 (</PHGKB/phgHome.action?action=forward&dbsource=covUpdate&id=524>)  
J Weiner et al, MEDRXIV, December 24, 2020

We analyzed a total of 332 samples. First, we enrolled 233 patients in Germany, Spain, and Switzerland for HLA and whole exome sequencing. We identified HLA-C\* 04:01 as a novel genetic predictor for severe clinical course in COVID-19. Carriers of HLA-C\* 04:01 had twice the risk of intubation when infected with SARS-CoV-2 (hazard ratio 2.1, adjusted p-value=0.0036). Importantly, these findings were successfully replicated in an independent data set.

- Estimated transmissibility and severity of novel SARS-CoV-2 Variant of Concern 202012/01 in England (</PHGKB/phgHome.action?action=forward&dbsource=covUpdate&id=527>)  
NG Davies et al, MEDRXIV, December 26, 2020

We estimate that VOC 202012/01 is 56% more transmissible (95% credible interval across three regions 50-74%) than preexisting variants of SARS-CoV-2. We were unable to find clear evidence that VOC 202012/01 results in greater or lesser severity of disease than preexisting variants. Nevertheless, the increase in transmissibility is likely to lead to a large increase in incidence, with COVID-19 hospitalizations and deaths projected to reach higher levels in 2021.

- Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine (/PHGKB/phgHome.action?action=forward&dbsource=covUpdate&id=536)  
LR Baden et al, NEJM, December 30, 2020

This phase 3 randomized, observer-blinded, placebo-controlled trial was conducted at 99 centers across the United States. Persons at high risk for SARS-CoV-2 infection or its complications were randomly assigned in a 1:1 ratio to receive two intramuscular injections of mRNA-1273 (100 µg) or placebo 28 days apart. The mRNA-1273 vaccine showed 94.1% efficacy at preventing Covid-19 illness, including severe disease

## Non-Genomics Precision Health Studies

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