

## 4 VIROLOGY

Coronaviruses, a family of viruses within the nidoviruses superfamily, are further classified according to their genera, alpha-, beta-, gamma- and deltacoronaviruses ( $\alpha$ -,  $\beta$ -,  $\gamma$ - and  $\delta$ -). Among those, alpha and beta species are capable of contaminating only mammals, whereas the other two genera can infect birds and could also infect mammals.<sup>13, 14</sup> Two of these genera belong to human coronaviruses (HCoVs):  $\alpha$ -coronaviruses, which comprise human coronavirus 229E (hcov229E) and human coronavirus NL63 (hcovNL63), and  $\beta$ -coronaviruses, which are human coronavirus HKU1, human coronavirus OC43, MERS-CoV (known as Middle East respiratory syndrome coronavirus) and SARS-CoV (referred to as severe acute respiratory syndrome coronavirus).<sup>15</sup>

The severe acute respiratory syndrome CoV-2 (SARS-CoV-2) is now named novel COVID-19 (coronavirus disease 2019).<sup>16</sup> Genome sequencing and phylogenetic research revealed that the COVID-19-causing coronavirus is a beta-coronavirus that belongs to the same subtypes as SARS virus, but represents a new variant group. The receptor-binding gene region