

markers predicted amino acid mutations that resulted in the epidemic strain (104). Transmission can also occur directly from the reservoir host to humans without RBD adaptations. The bat coronavirus that is currently in circulation maintains specific “poised” spike proteins that facilitate human infection without the requirement of any mutations or adaptations (105). Altogether, different species of bats carry a massive number of coronaviruses around the world (106).

The high plasticity in receptor usage, along with the feasibility of adaptive mutation and recombination, may result in frequent interspecies transmission of coronaviruses from bats to animals and humans (106). The pathogenesis of most bat coronaviruses is unknown, as most of these viruses are not isolated and studied (4). Hedgehog coronavirus HKU31, a Betacoronavirus, has been identified from and near hedgehogs in China. Studies show that hedgehogs are the reservoir of Betacoronavirus, and there is evidence of recombination (107).

The current scientific evidence available on MERS infection suggests that the significant reservoir host, as well as the animal source of MERS infection in humans, is the dromedary camels (97). The infected dromedary may not show any visible signs of infection, making it challenging to