

SARS-CoV-2: Susceptibility of farm and wildlife animal cell lines and complex 3D cell culture

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Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the causative agent of the coronavirus disease 2019 (COVID 19) and responsible for the ongoing pandemic. It includes a broad spectrum of symptoms from asymptomatic forms to severe acute respiratory syndrome including hospitalization and death. To gain a better understanding of the replication behaviour of SARS-CoV-2 and its ability to infect different animal host cells and its zoonotic potential, we performed a screening for infection and susceptibility of different animal cell lines. We were able to distinguish between different levels of infection. Among multiple lines not susceptible to SARS-CoV-2 we identified cells that were infected but did not allow further spread, and highly susceptible cells that allow infection and efficient spread. Interestingly, although swine cells have been reported to be non-susceptible to SARS-CoV-2 infection, we identified highly susceptible wild boar cells, indicating that the specific cell type or physiology is more decisive for SARS-CoV-2 infection than host species origin. In addition to the cell line infection models, we aim to generate complex 3D cell culture infection models such as precision cut lung slices (PCLS) and organoids to investigate virus replication in the context of differentiated primary cells.

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