Watanabe R. et al. (2008) ***Entry from the Cell Surface of Severe Acute Respiratory Syndrome Coronavirus with Cleaved S Protein as Revealed by Pseudotype Virus Bearing Cleaved S Protein.***
J. Virol. 82(23): 11985-11991. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2583654

Severe acute respiratory syndrome (SARS) coronavirus (SARS-CoV) is ***known to take an endosomal pathway for cell entry.*** However, it is thought ***to enter directly from the cell surface when a receptor-bound virion spike (S) protein is affected by trypsin, which induces cleavage of the S protein and activates its fusion potential.*** This suggests that SARS-CoV bearing a cleaved form of the S protein can enter cells directly from the cell surface without trypsin treatment. To explore this possibility, ***WE INTRODUCED A FURIN-LIKE CLEAVAGE SEQUENCE in the S protein at amino acids 798 to 801 and found that the mutated S protein was cleaved and induced cell fusion without trypsin treatment when expressed on the cell surface.*** Furthermore, ***a pseudotype virus bearing a cleaved S protein was revealed to infect cells in the presence of a lysosomotropic agent as well as a protease inhibitor, both of which are known to block SARS-CoV infection via an endosome,*** whereas the infection of pseudotypes with an uncleaved, wild-type S protein was blocked by these agents. A heptad repeat peptide, derived from a SARS-CoV S protein that is known to efficiently block infections from the cell surface, blocked the infection by a pseudotype with a cleaved S protein but not that with an uncleaved S protein. Those results indicate that ***SARS-CoV with a cleaved S protein is able to enter cells directly from the cell surface and agree with the previous observation of the protease-mediated cell surface entry of SARS-CoV***. …

Après que sa protéine de surface S ait été activée par clivage par une activité protéasique de type trypsine, **le SARS-CoV-1** peut pénétrer dans une cellule par la voie d'entrée des endosomes. **Une modification du gène correspondant permet de construire une protéine S modifiée par introduction d'une séquence de clivage de type furine. Cette protéine mutante prédécoupée permet l'entrée du virus même en présence d'inhibiteurs protéasiques qui empêchent l'entrée d'un virus porteur d'un protéine S non modifiées (Watanabe et al. 2008).**