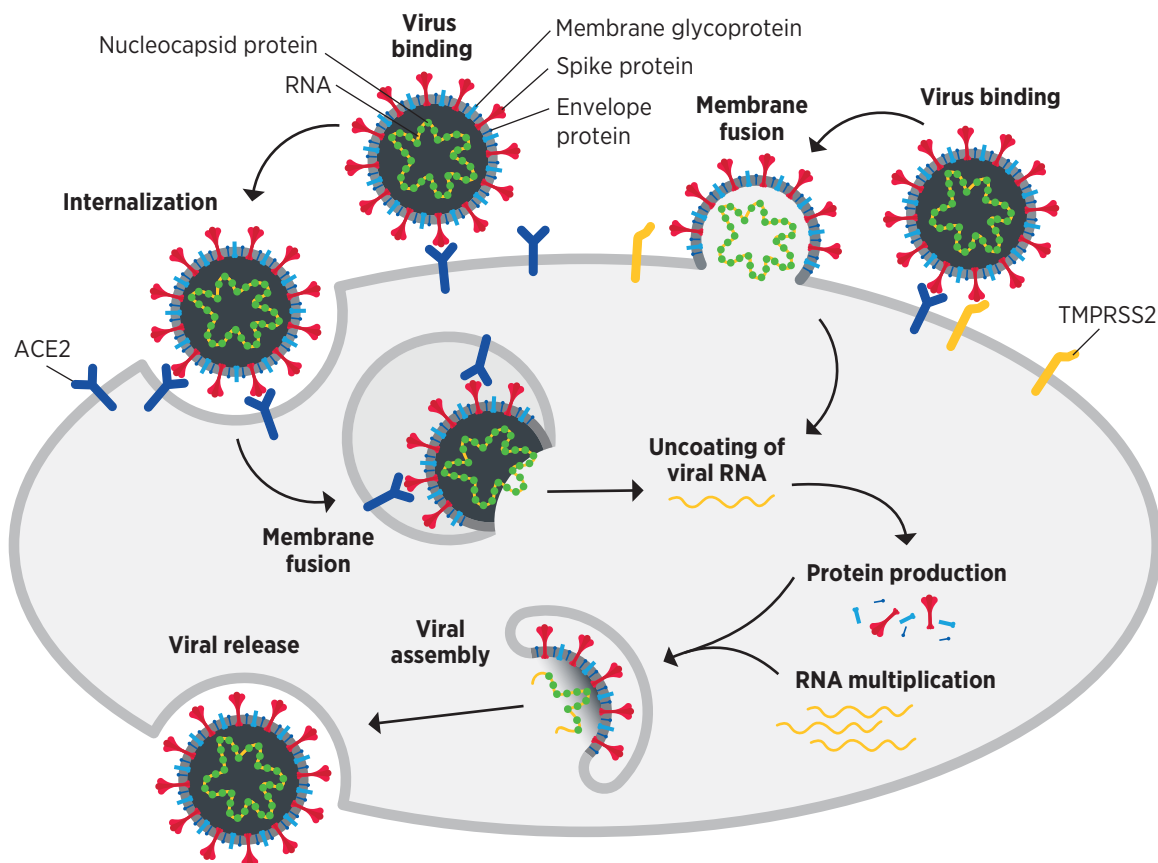


FIGURE 2 SARS-COV-2 INFECTION AND MULTIPLICATION



Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the virus that causes Coronavirus Disease 2019 (COVID-19). Each SARS-CoV-2 particle contains RNA as its genetic material, encased in a “shell” formed of the nucleocapsid protein. This is enclosed in a lipid envelope. Three structural proteins pass through the lipid envelope, the envelope protein, the membrane protein, and the spike protein. SARS-CoV-2 particles can only enter cells (host) that have a protein called angiotensin-converting enzyme 2 (ACE2) on the surface. The entry is mediated by the attachment of the spike protein to ACE2 on the cells such as those lining the nasal passages and lungs. To enter cells, the virus needs another host protein, called TMPRSS2, to be present on the cell surface. TMPRSS2

modifies the spike protein, triggering fusion of the SARS-CoV-2 envelope with host cell membranes. If there are not enough TMPRSS2 protein molecules on the host cell surface, the virus can be internalized within specialized compartments in the cell where the spike is modified by a different host protein. Fusion of the viral envelope with host cell membrane allows the encased viral RNA to fully enter the host cell where it takes over the host’s cellular machinery to produce copies of itself and to produce more envelope, nucleocapsid, membrane, and spike proteins. These components are then assembled into new SARS-CoV-2 viral particles which are released from the cells. The new viral particles can infect other cells or leave the body and infect other individuals.