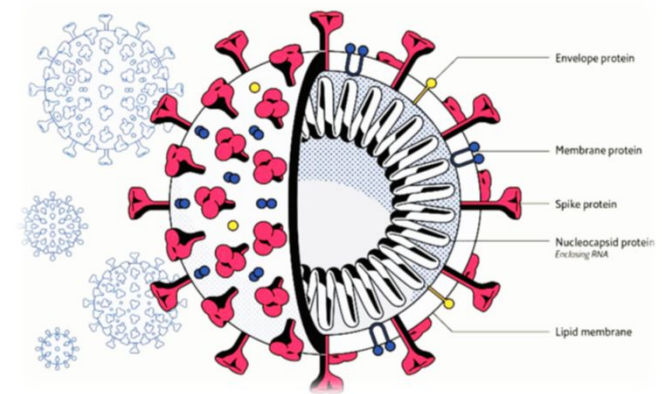
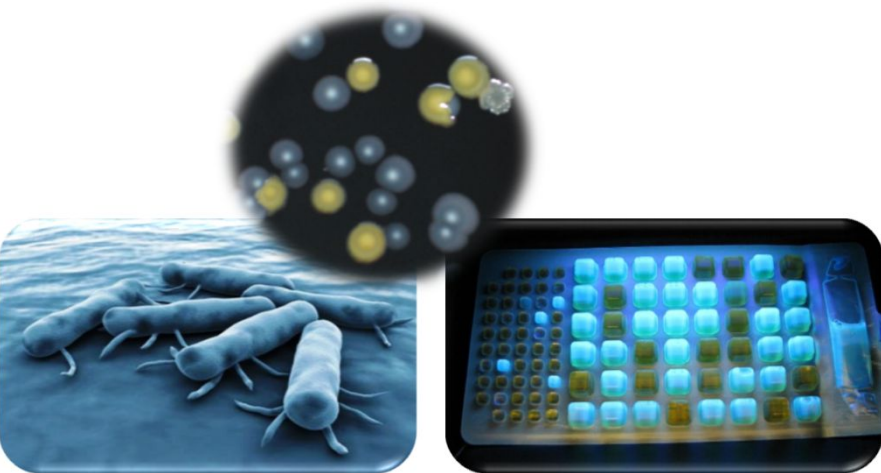


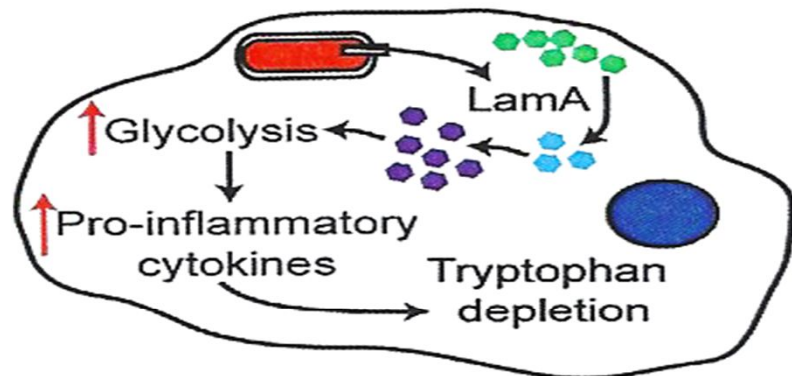
# Legionella pneumophila and SARS-CoV-2 have very similar life cycle

**October 2020**

**Dr. habil. Anna Salek**



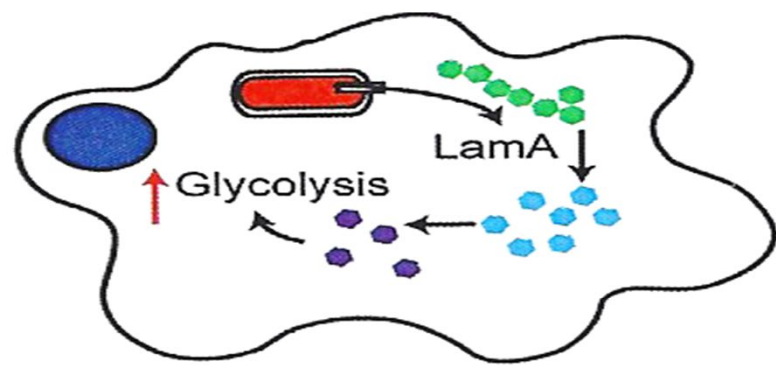
## Macrophage infection



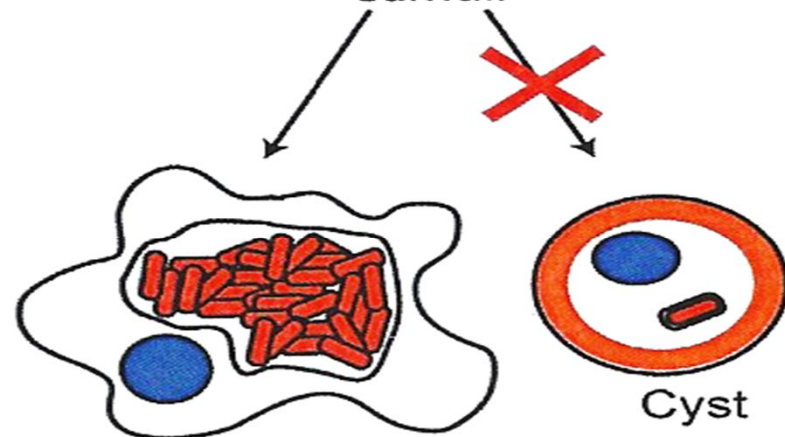
M1-like polarization  
↓  
Innate nutritional immunity






## *Amoebae* infection

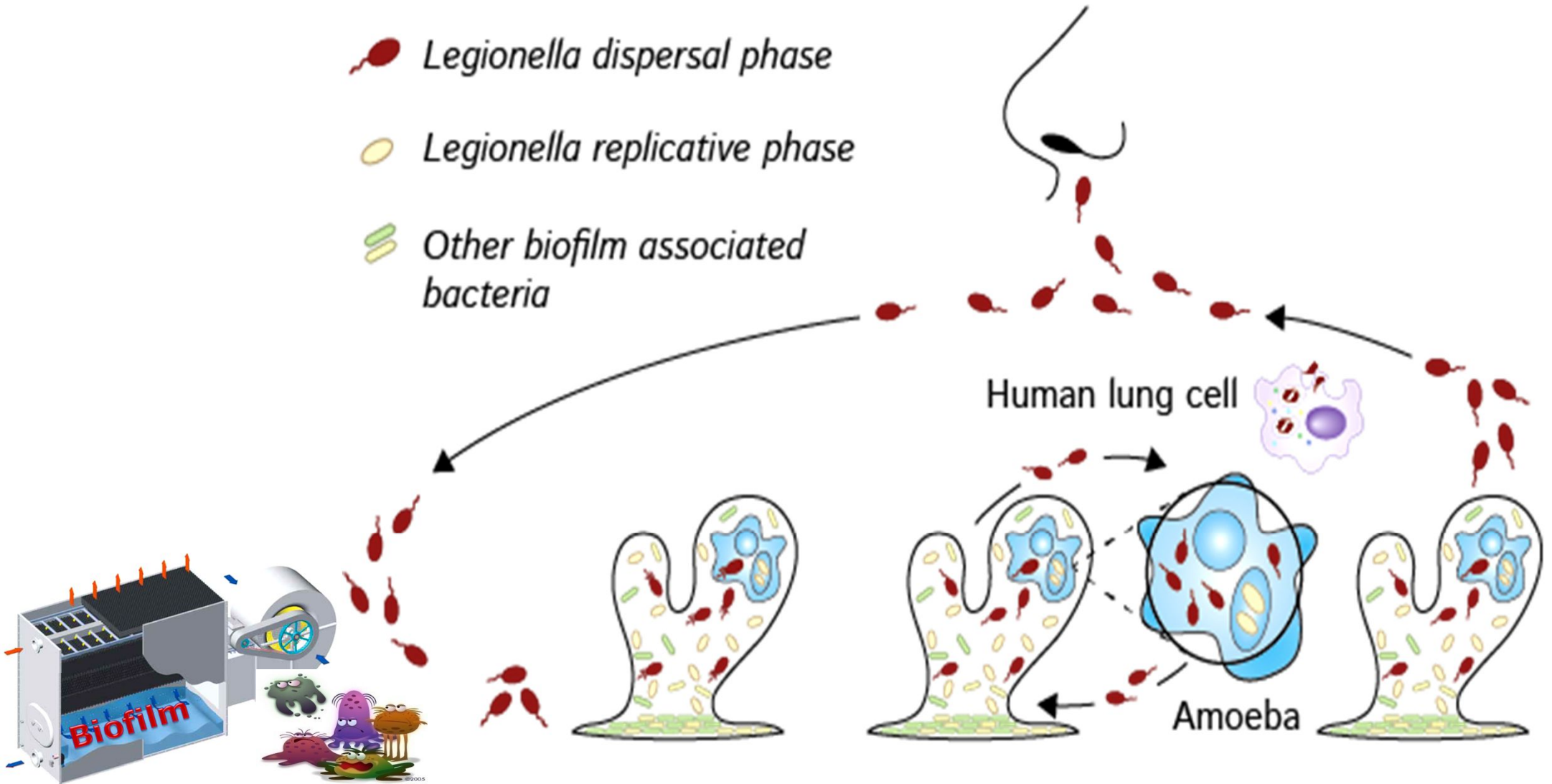


Encystation stimuli

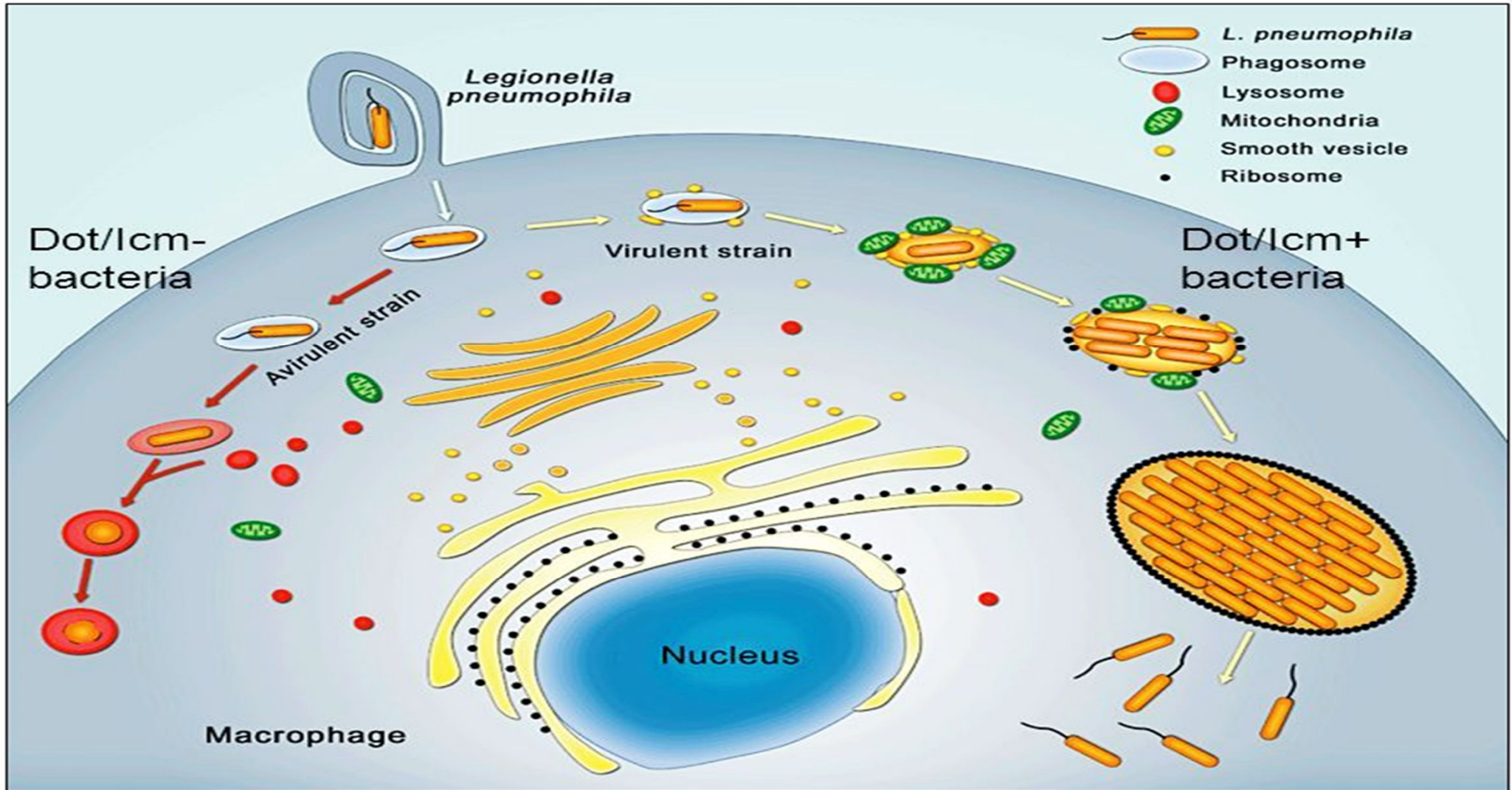


# Legionella pneumophila: Biofilm

-  Legionella dispersal phase
-  Legionella replicative phase
-  Other biofilm associated bacteria

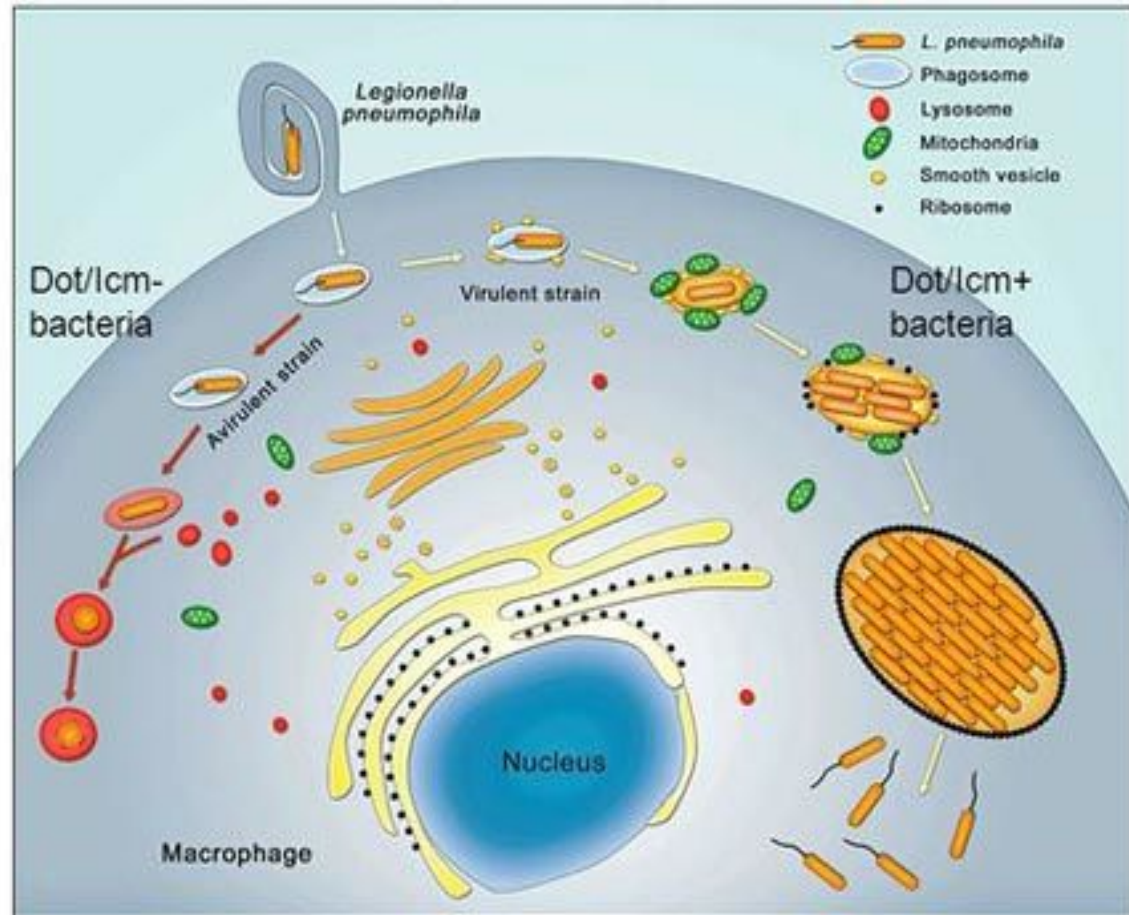


# Legionella pneumophila: Pathogenesis

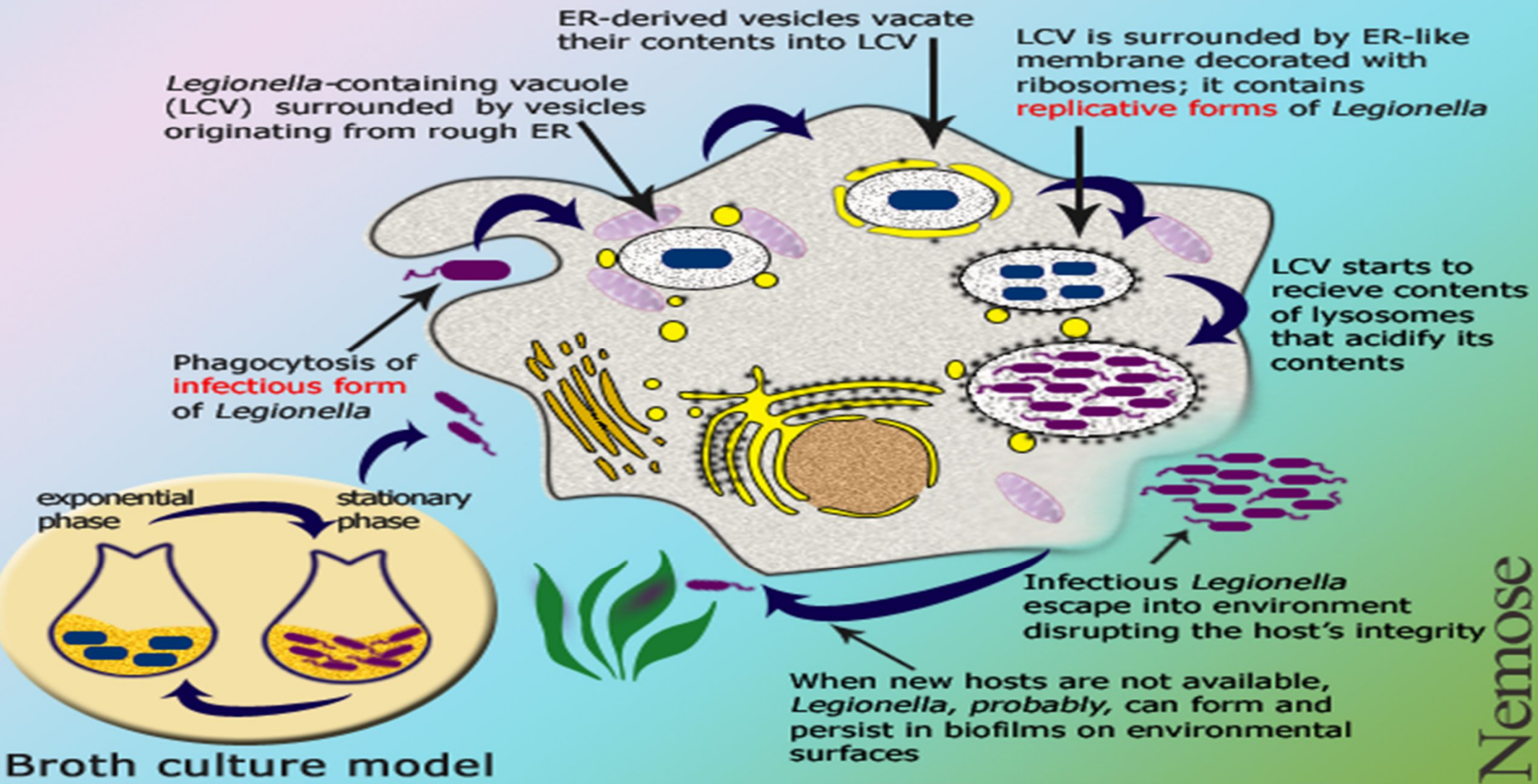


# Legionella pneumophila: Legionellose

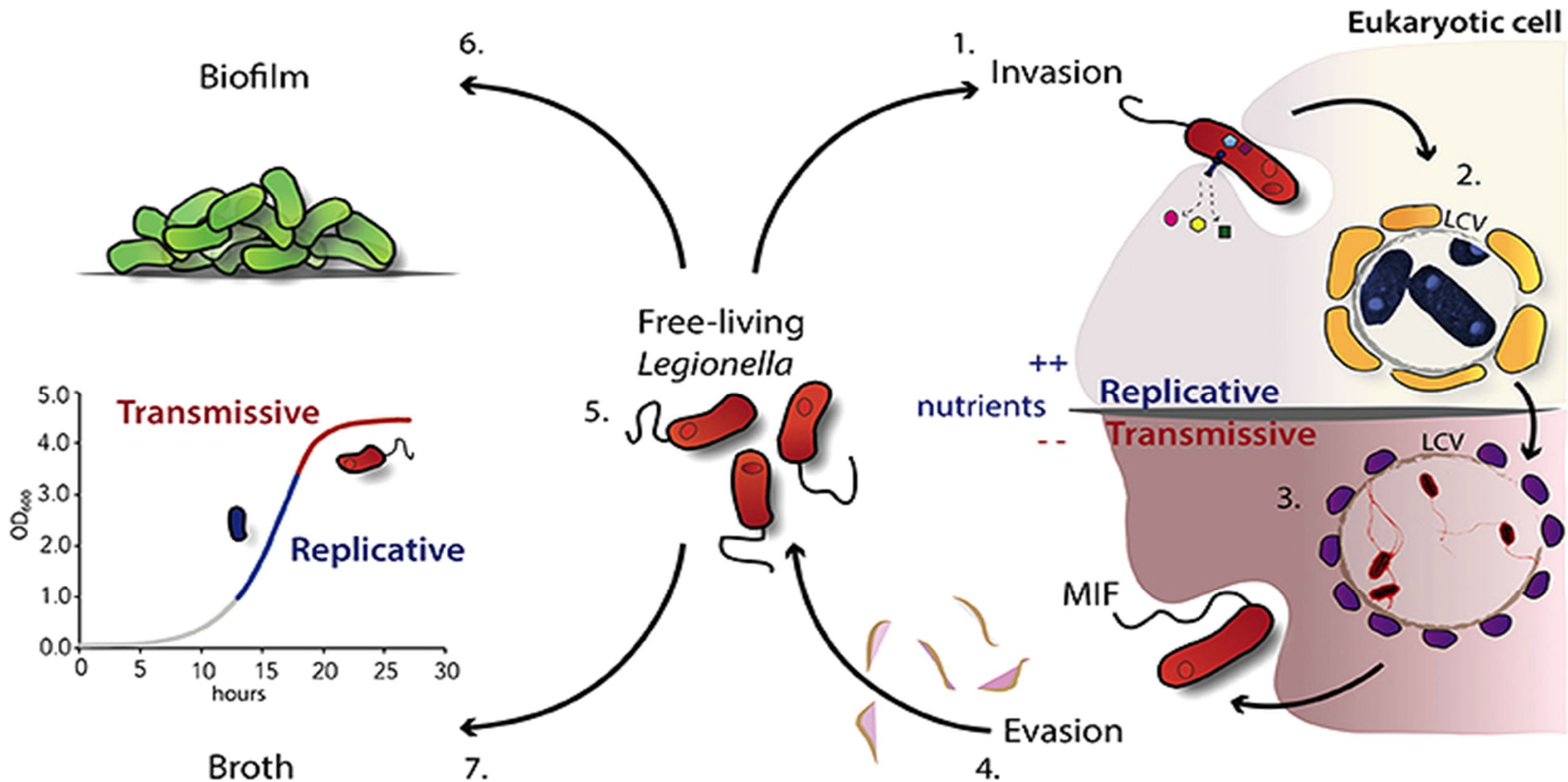
## SYMPTOMS



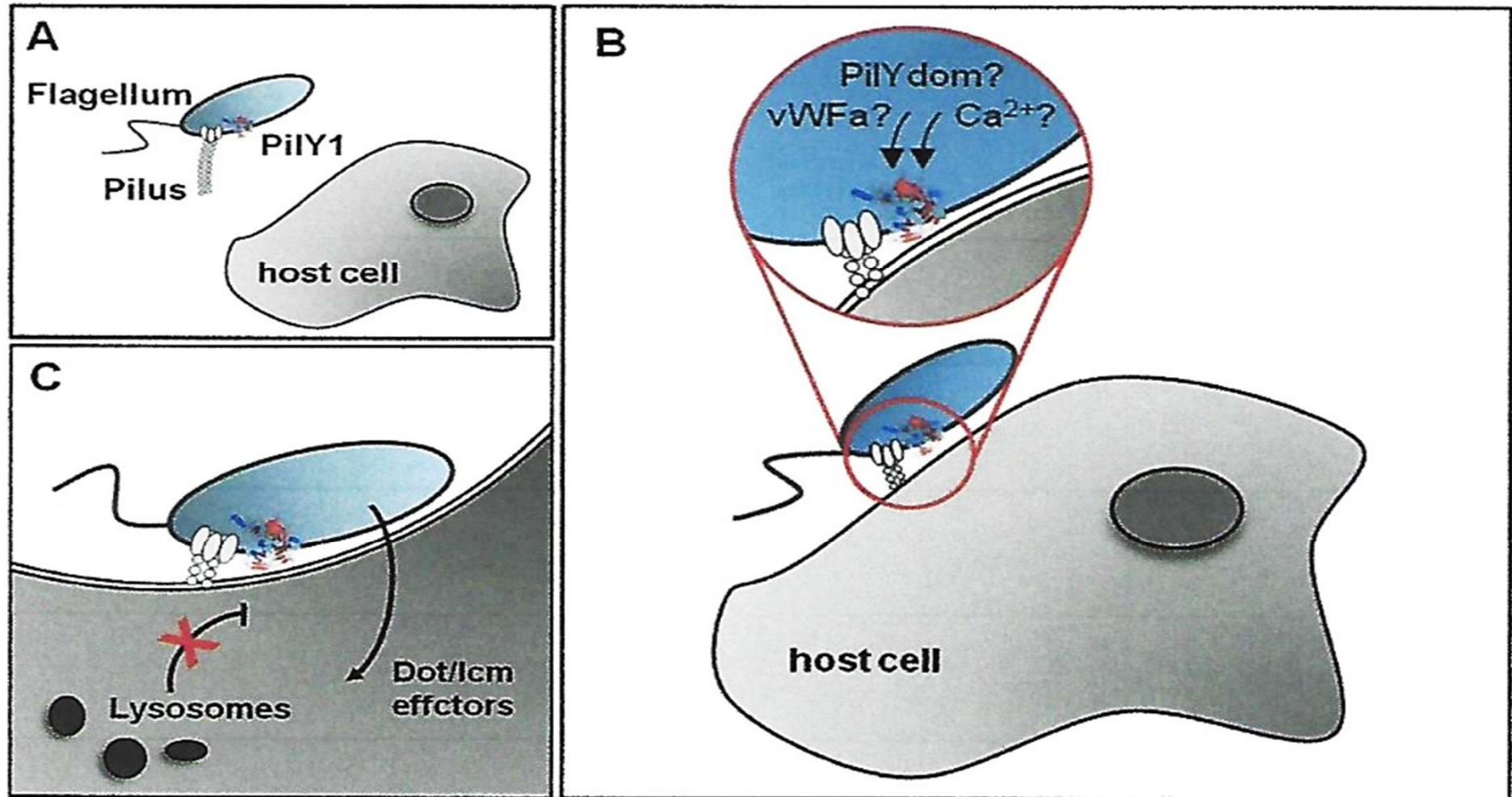
# Growth cycles of *Legionella pneumophila*



# Legionella: replication and transmission

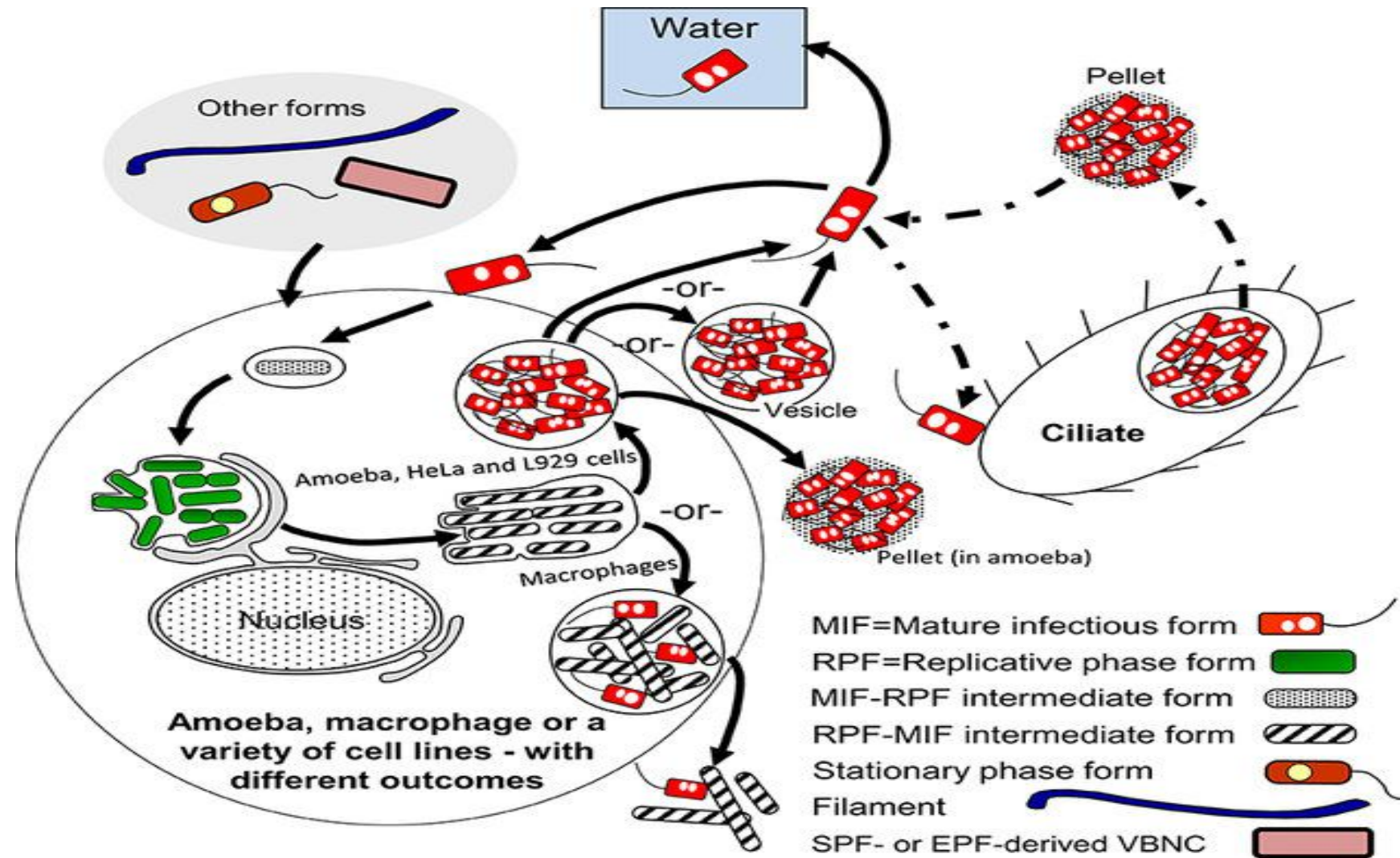


# Pathogenity of *Legionella pneumophila*

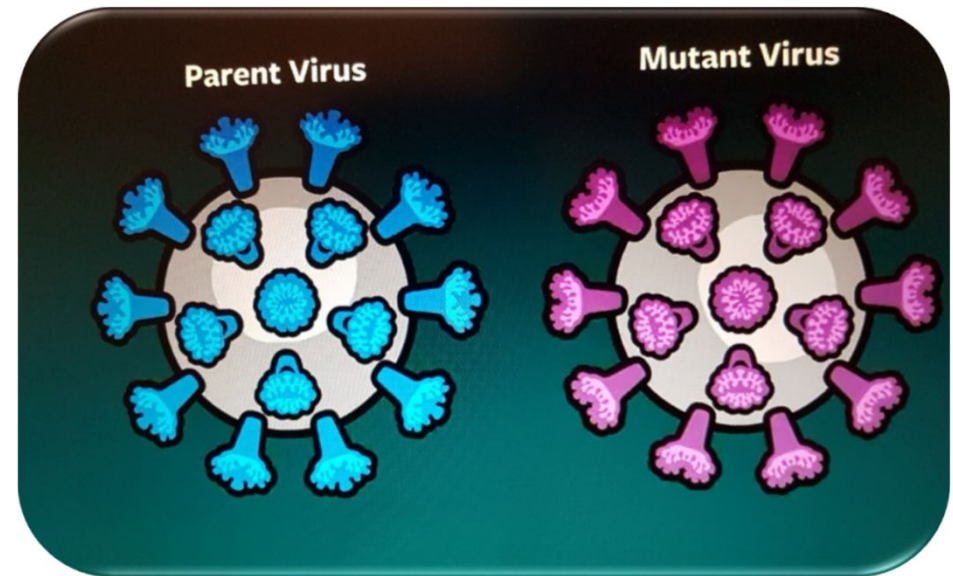
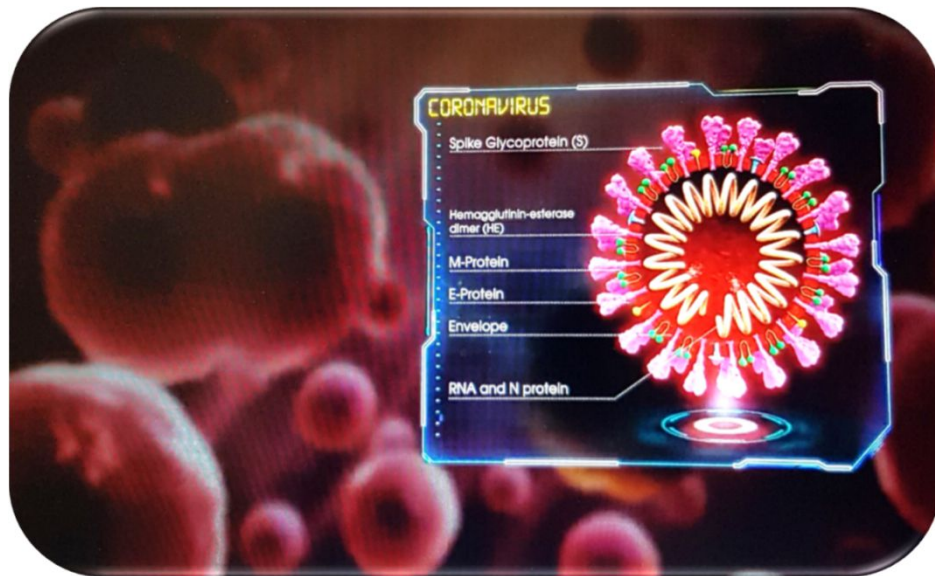




# Legionella: replication and transmission



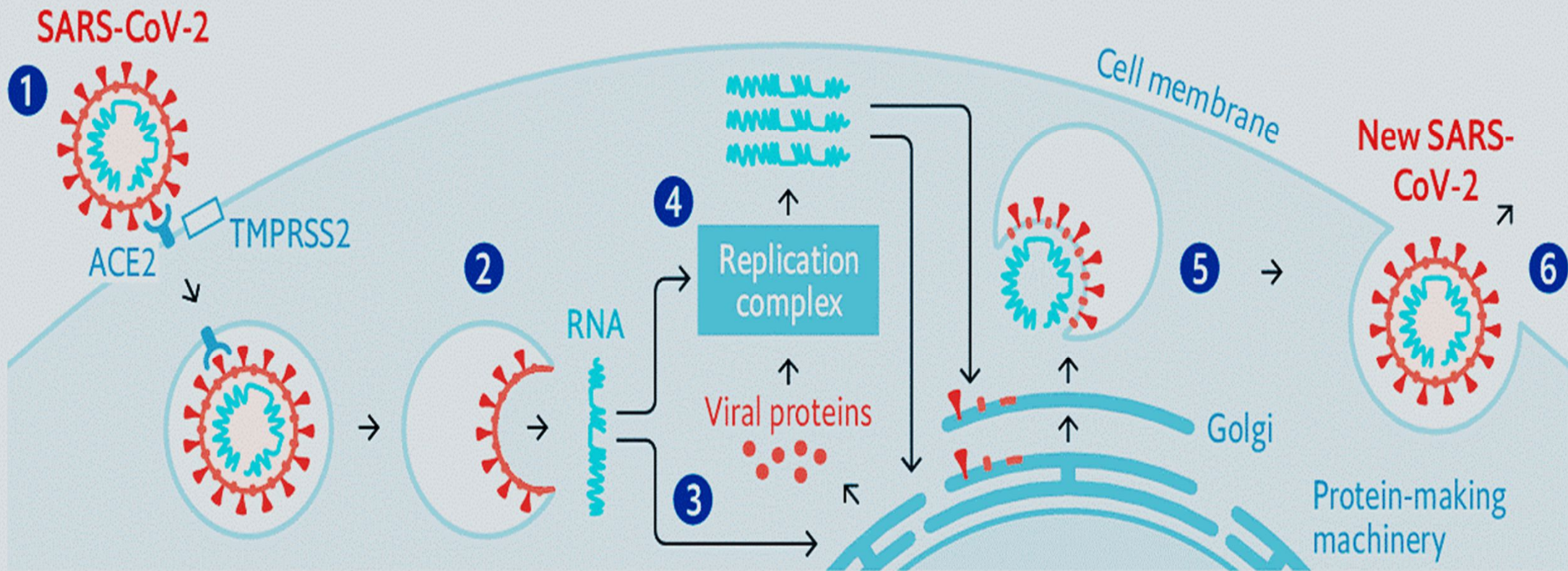
# New Coronavirus SARS-CoV-2



# Infection possibility



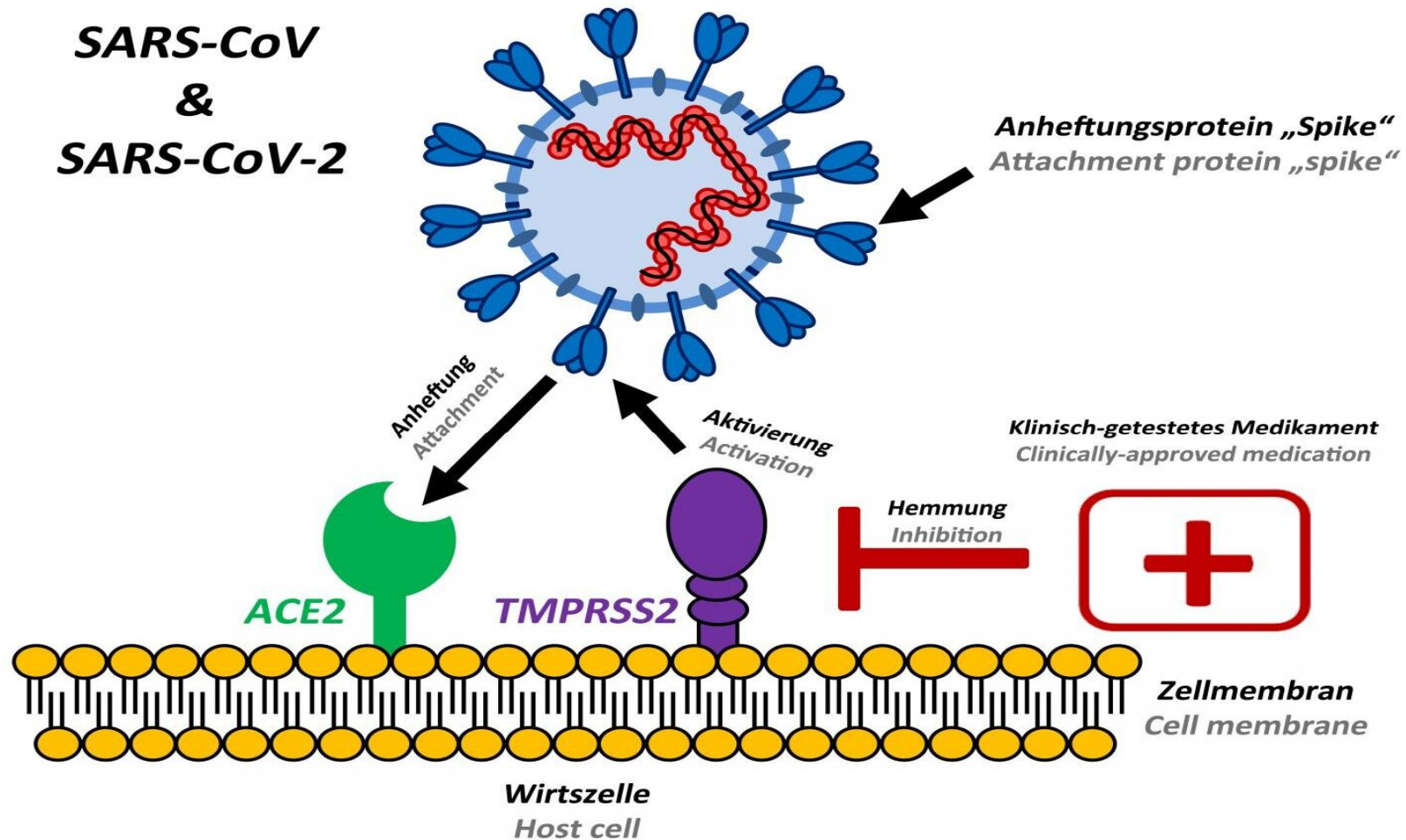
# SARS-CoV-2 replication and transmission



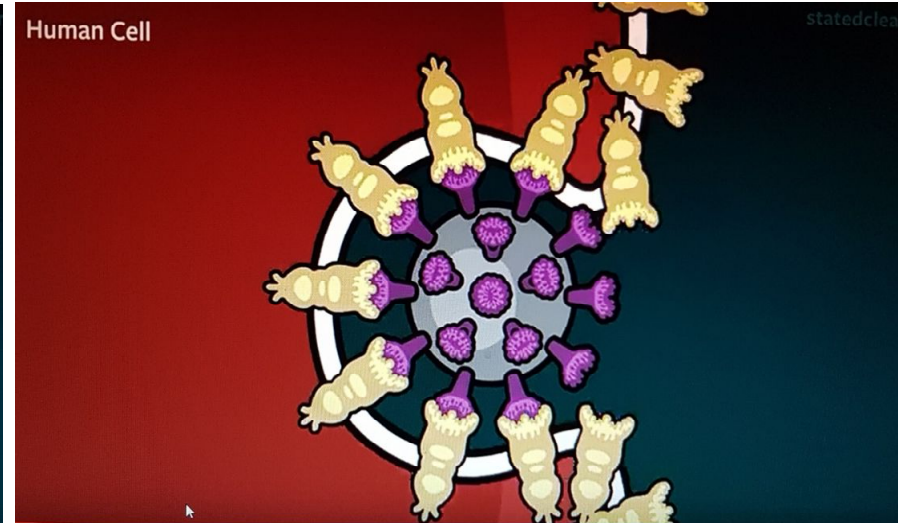
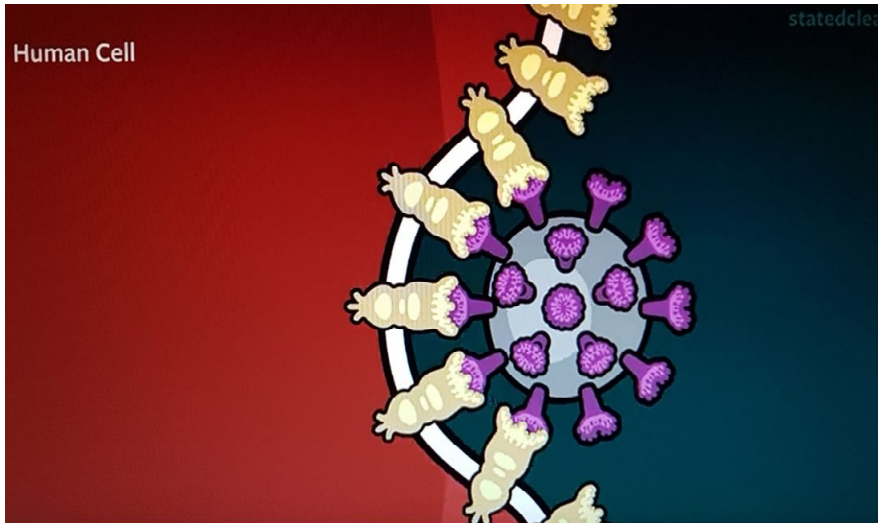
**1** Spike protein on the virion binds to ACE2, a cell-surface protein. TMPRSS2, an enzyme, helps the virion enter **2** The virion releases its RNA **3** Some RNA is translated into proteins by the cell's machinery **4** Some of these proteins form a replication complex to make more RNA **5** Proteins and RNA are assembled into a new virion in the Golgi and **6** released

Sources: Song et al., *Viruses*, 2019; Jiang et al., *Emerging Microbes and Infections*, 2012; *The Economist*

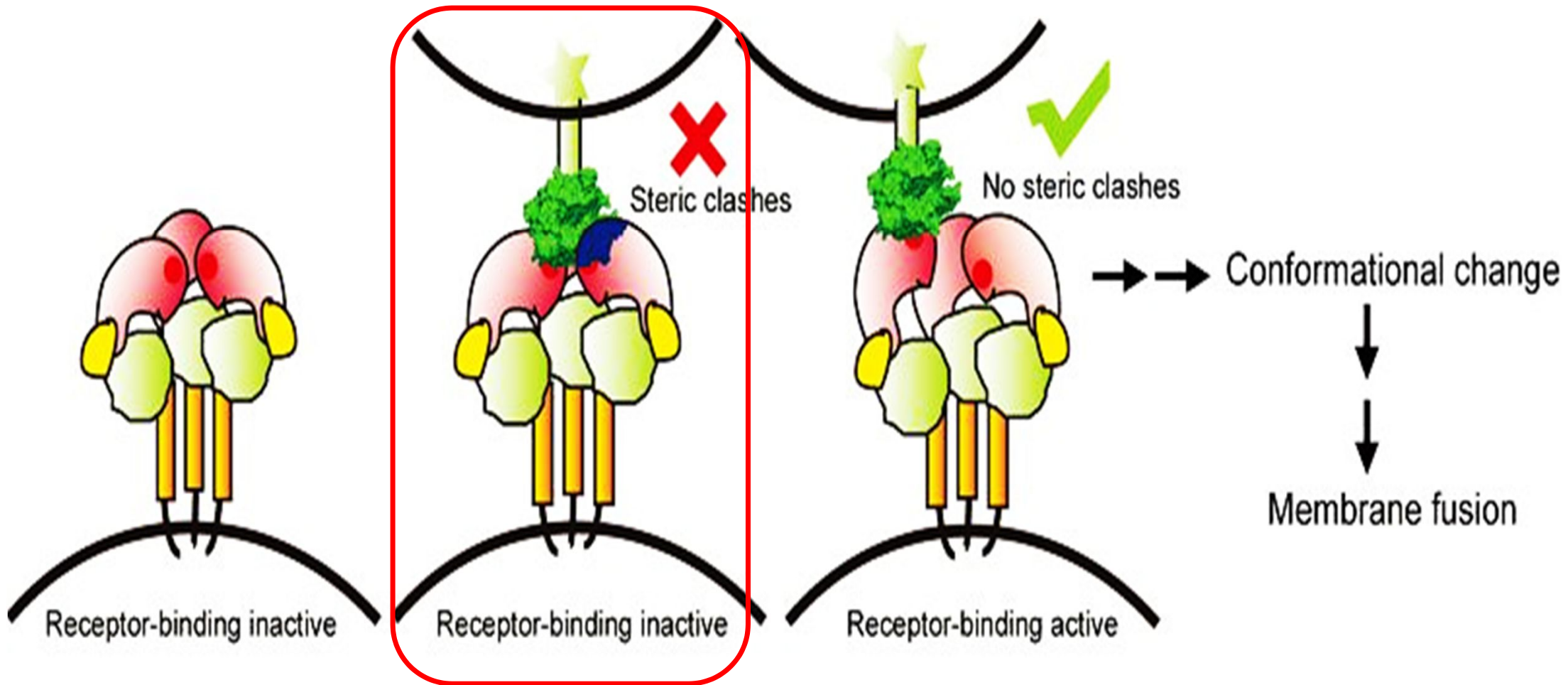
# SARS-CoV-2 (Spike S) & ACE2 receptors



# Host cells (lung): SARS-CoV-2 endocytose



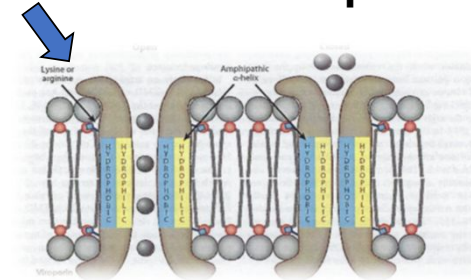
# SARS-CoV-2 & ACE2 receptors neutralisation



# Mechanism of neutralisation a spikeS1 and ACE2

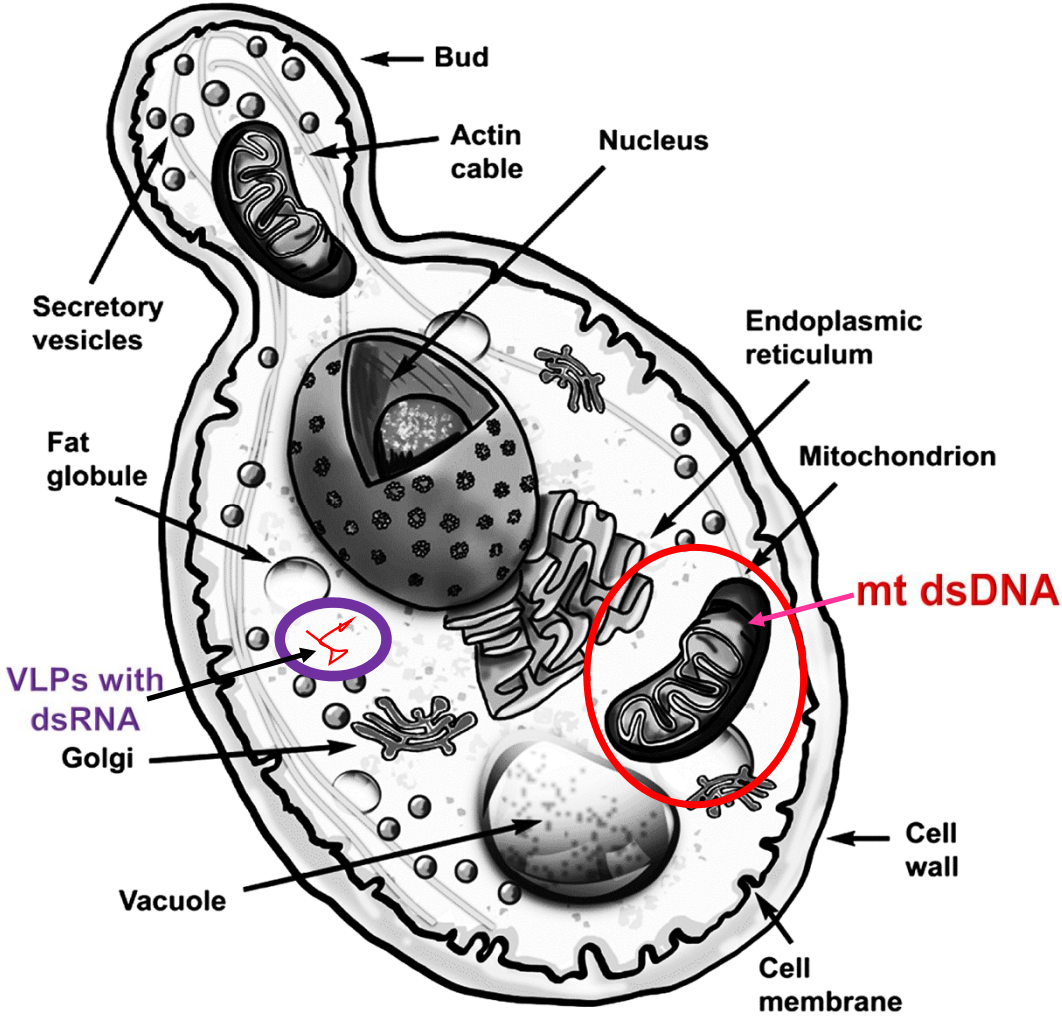
Single structure the nucleocapsid of SARS-CoV-2 is an important subunit for packaging the viral genome (ssRNA) through protein oligomerization.

This structure could be destroyed through Yeast Complex Proteins, as well as through competent like proteases and biological substances from our oral medicine, which partly destroyed phospholipids bilayer of Coronavirus envelope.





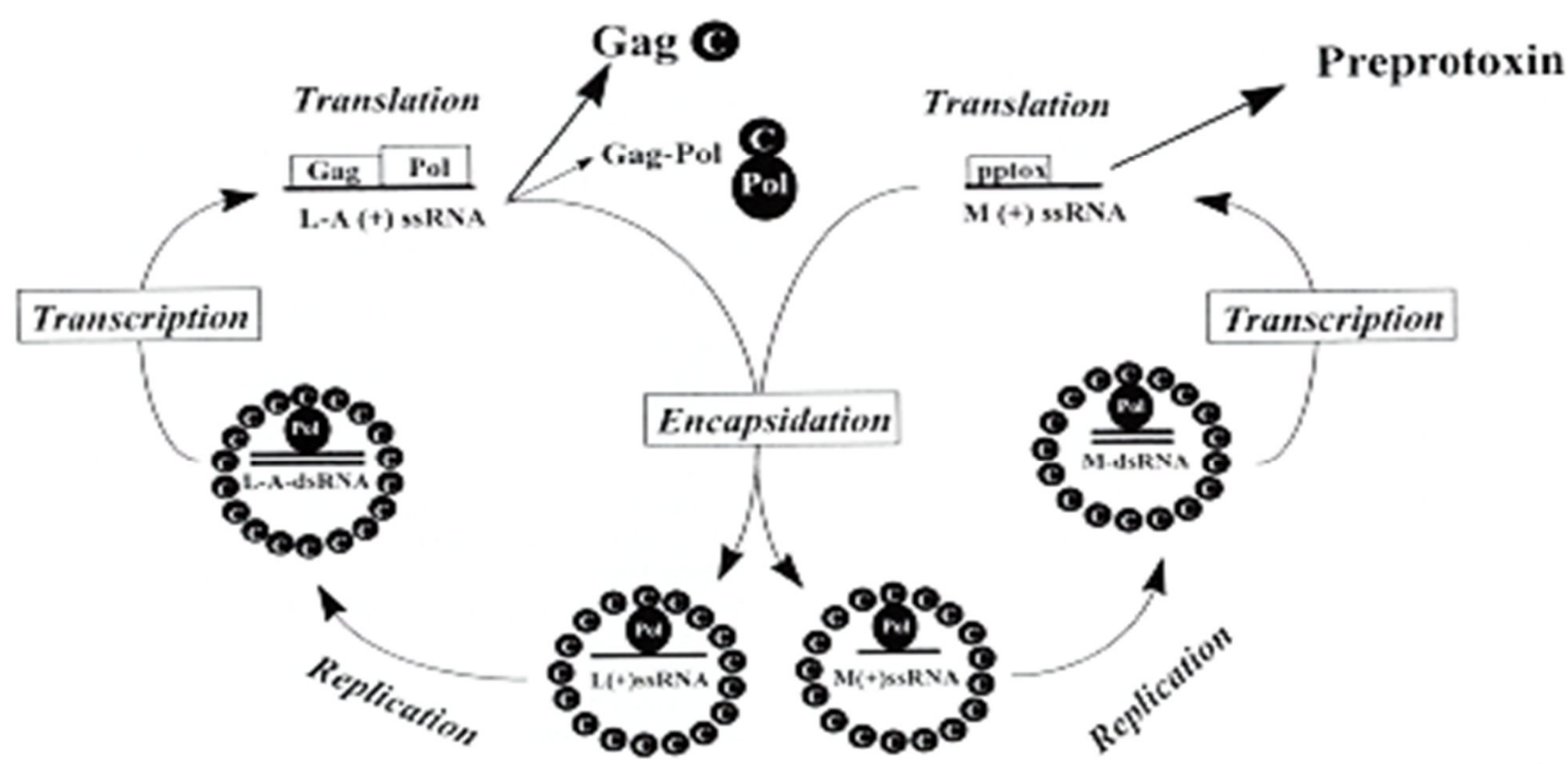
# Yeast with dsRNA (VLPs) or mt dsDNA



# Yeast with VLPs contained dsRNA

L-A helper virus

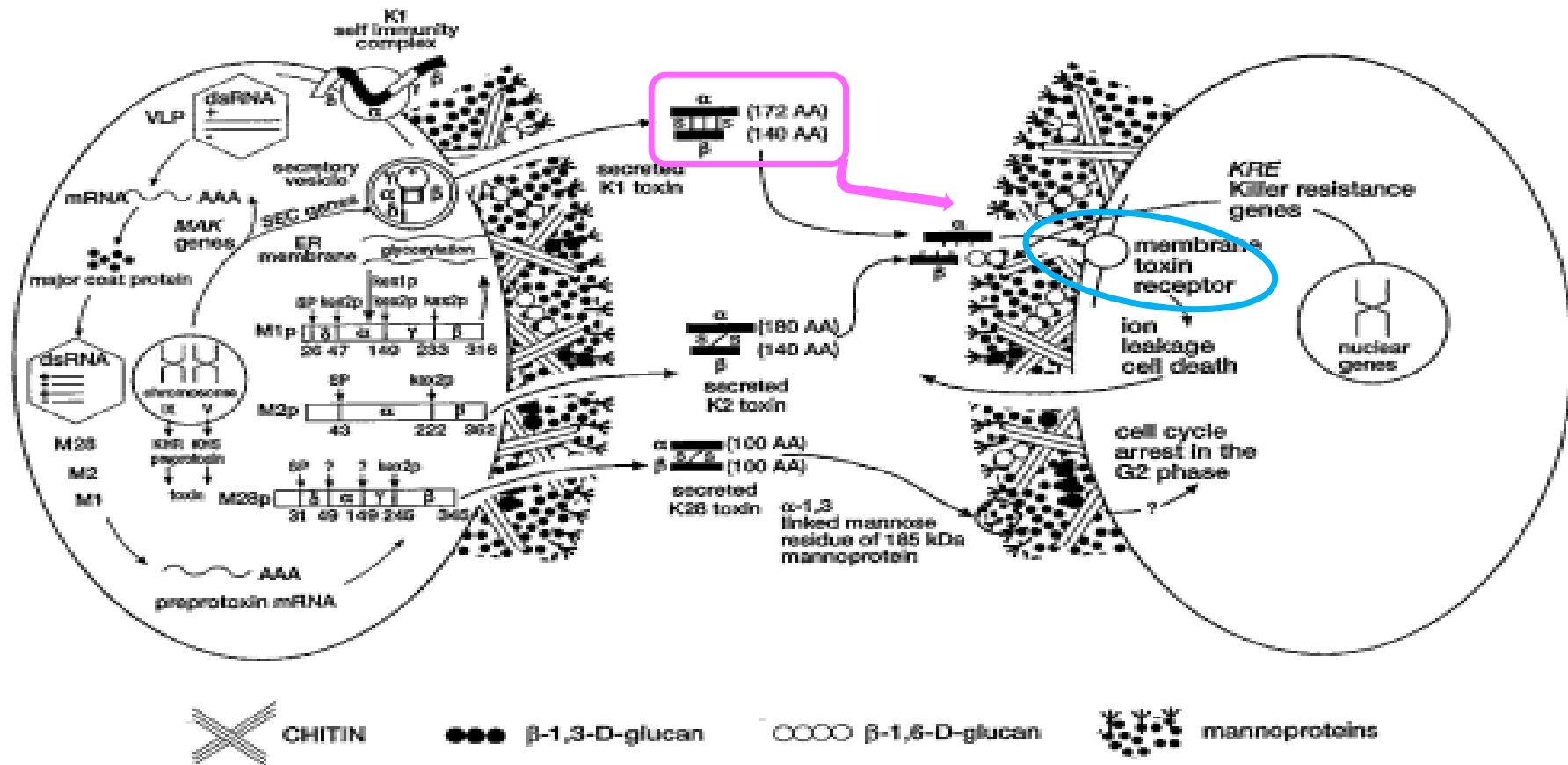
M satellite virus



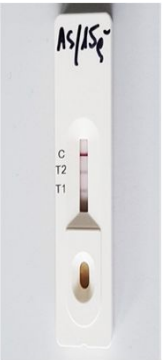
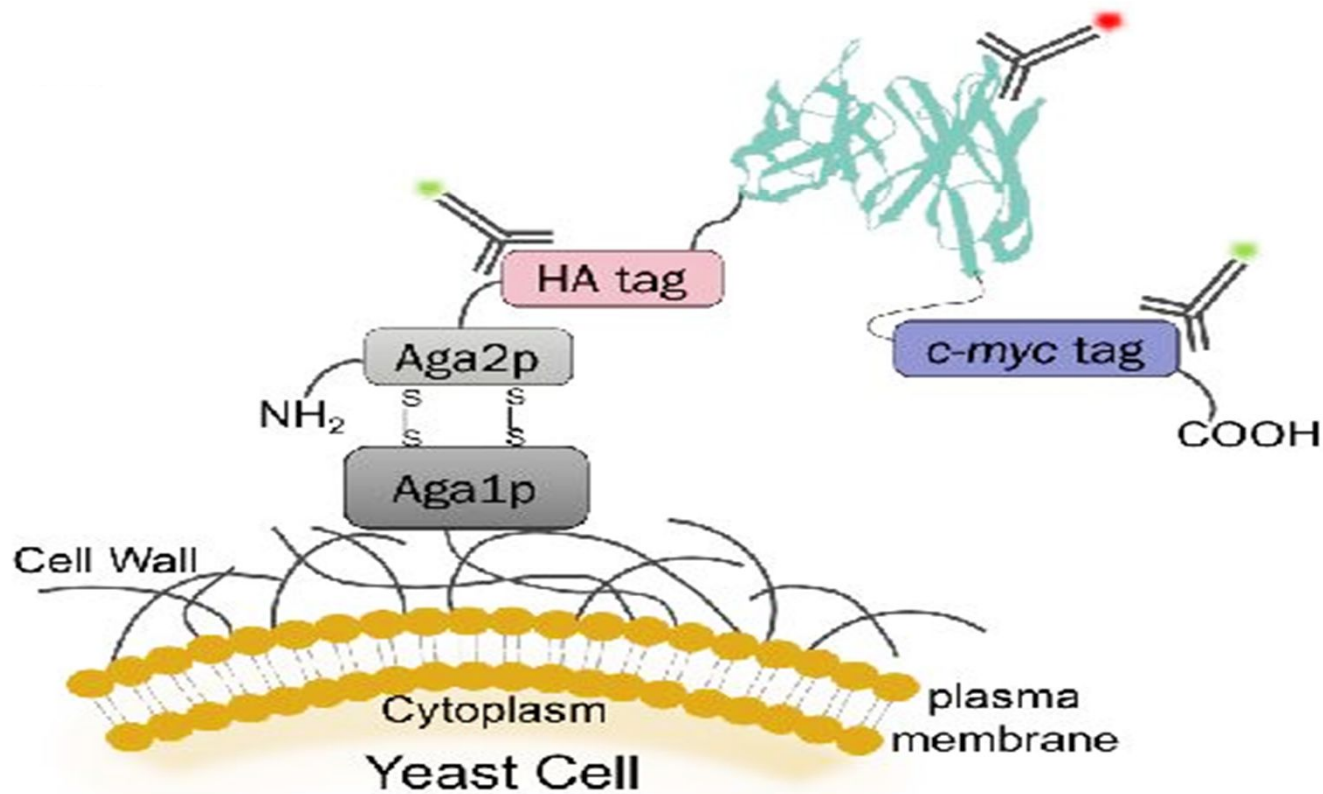
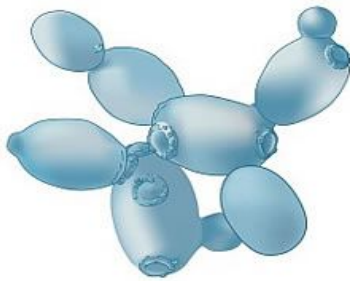
# Yeast with dsRNA from VLPs

*Saccharomyces cerevisiae* killer cell

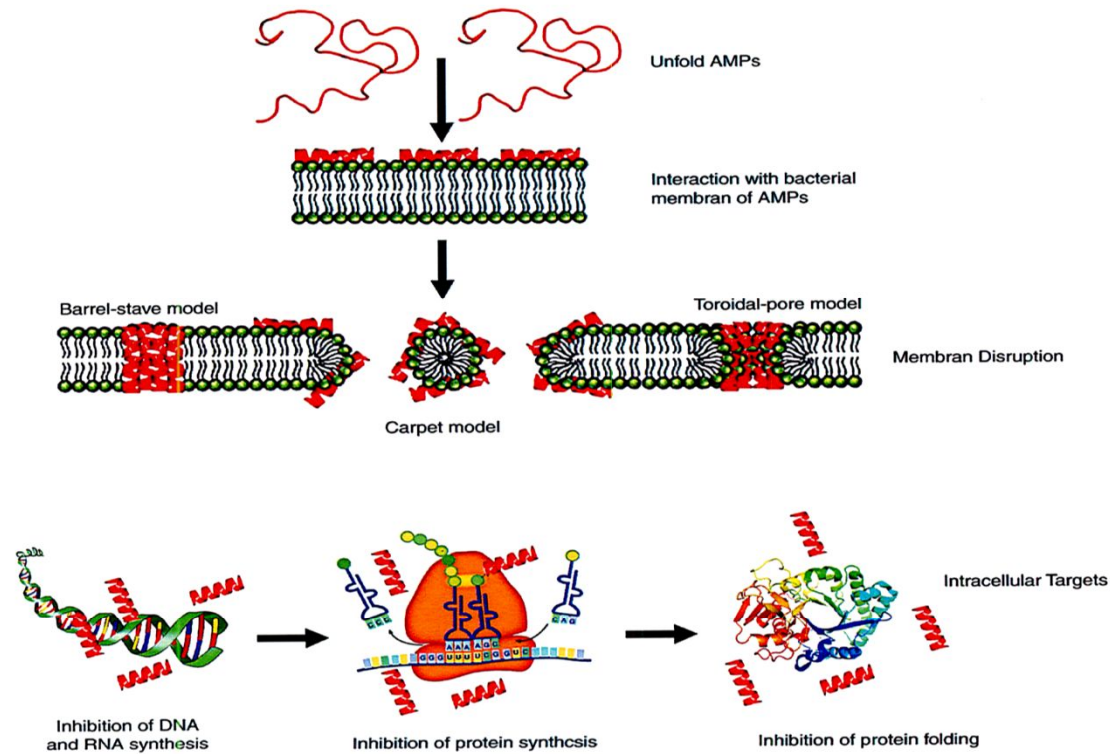
Susceptible yeast cell



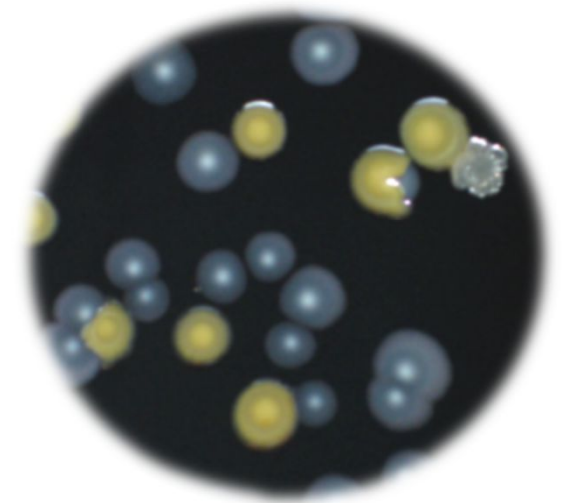
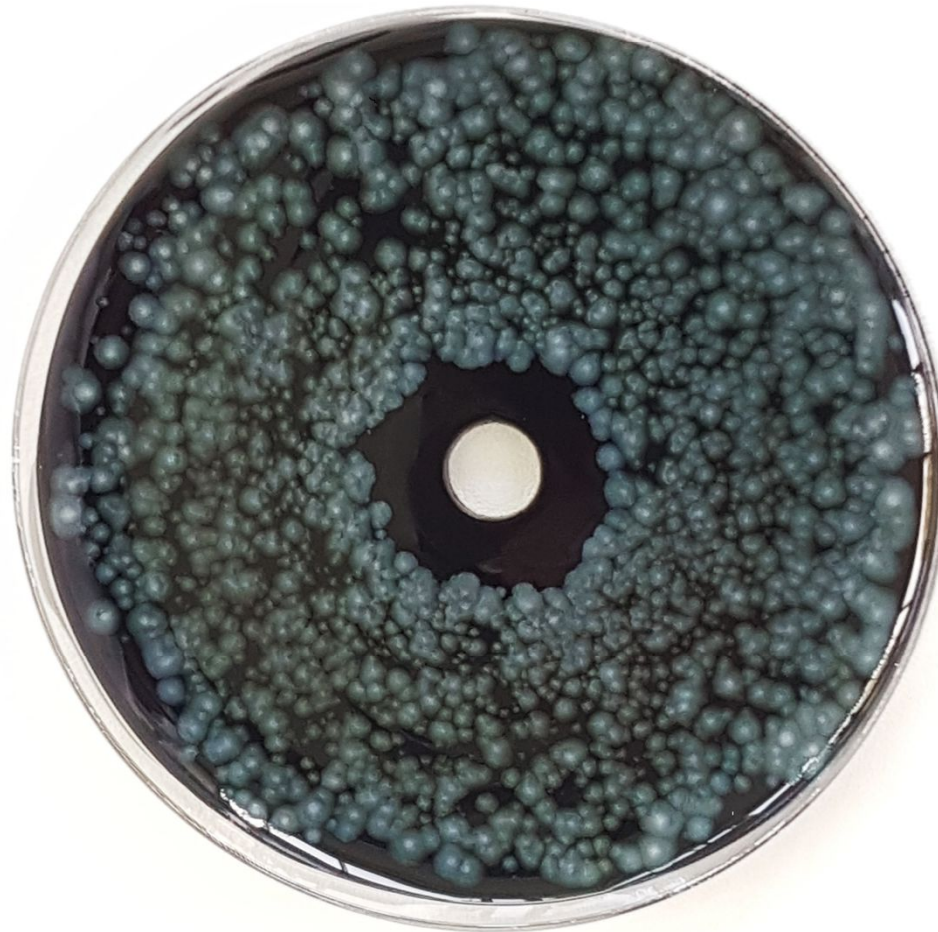
# Yeast antibody platform



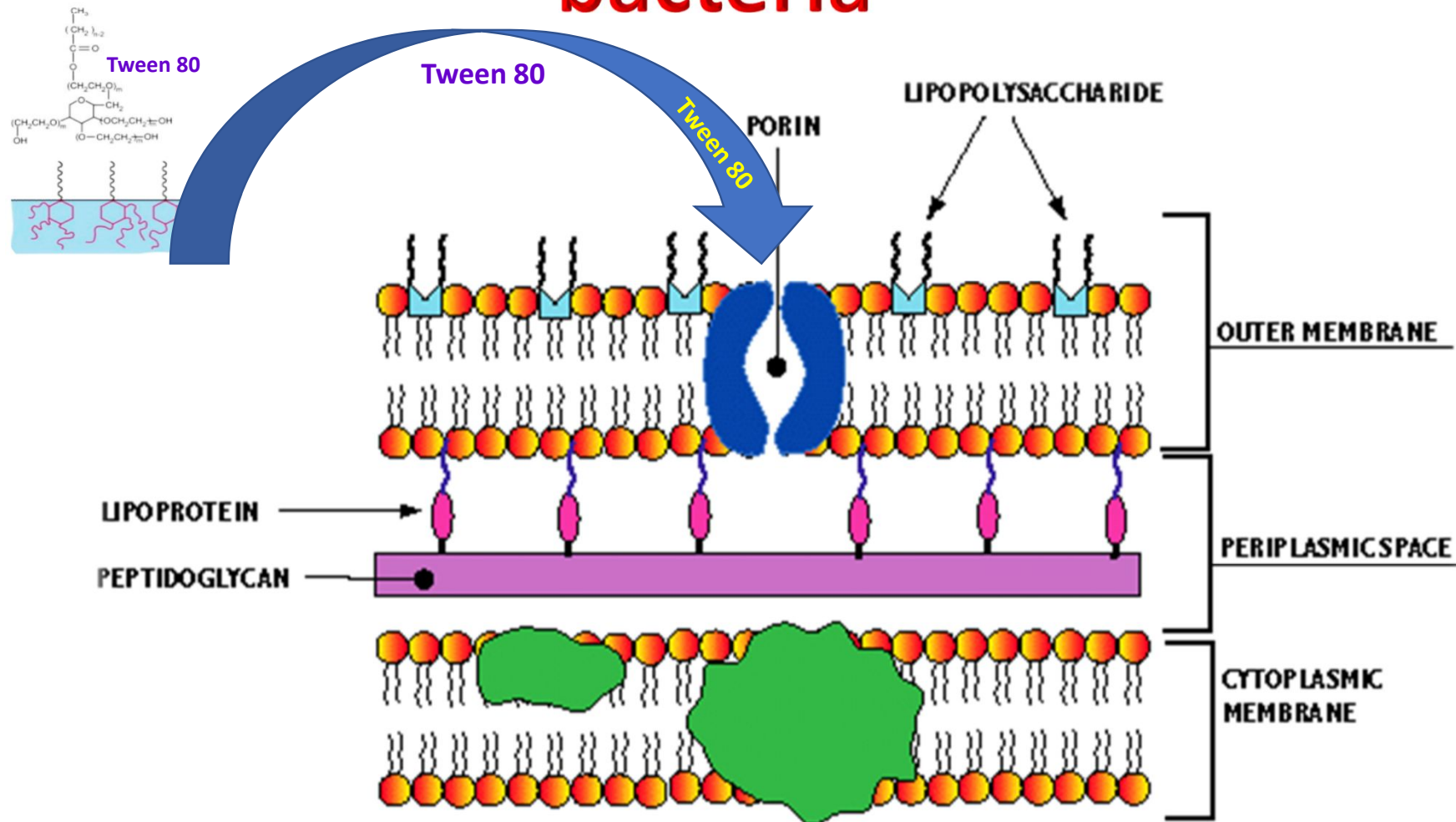
# Antimicrobial Yeast Complex Proteins



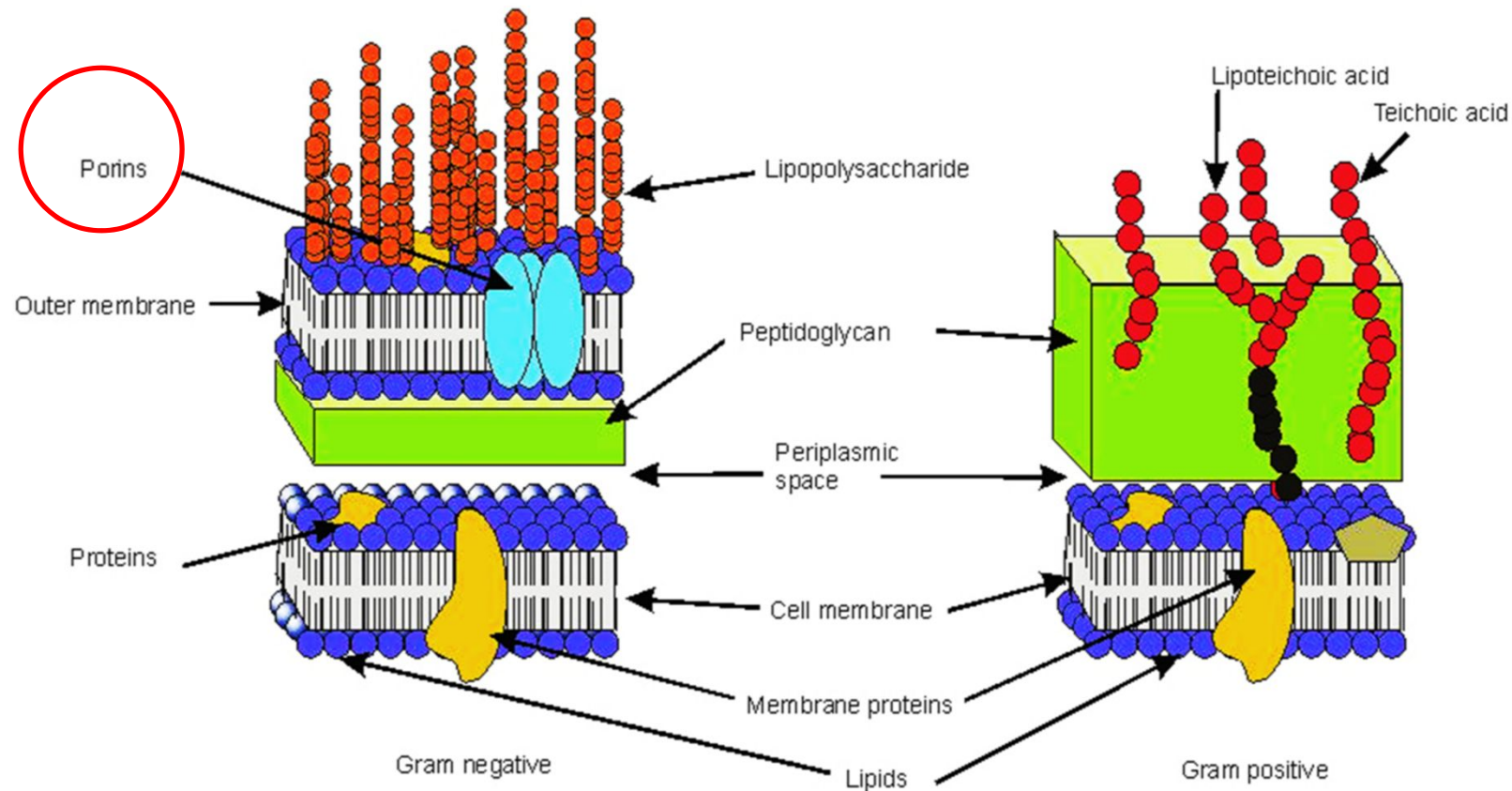
**Yeast destroyed membrane of  
*Legionella pneumophila***



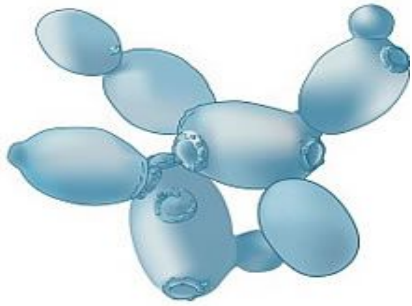
# Structure of membrane in Gram-negative bacteria



# Structure of membrane in Gram-negative and Gram-positive bacteria







**Thank you for your attention**

