Preventing virus entry into cells

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Identification of a mechanism by which CD74 – a cellular antiviral protein – blocks Ebola and Corona virus (SARS-CoV-2) entry into host cells

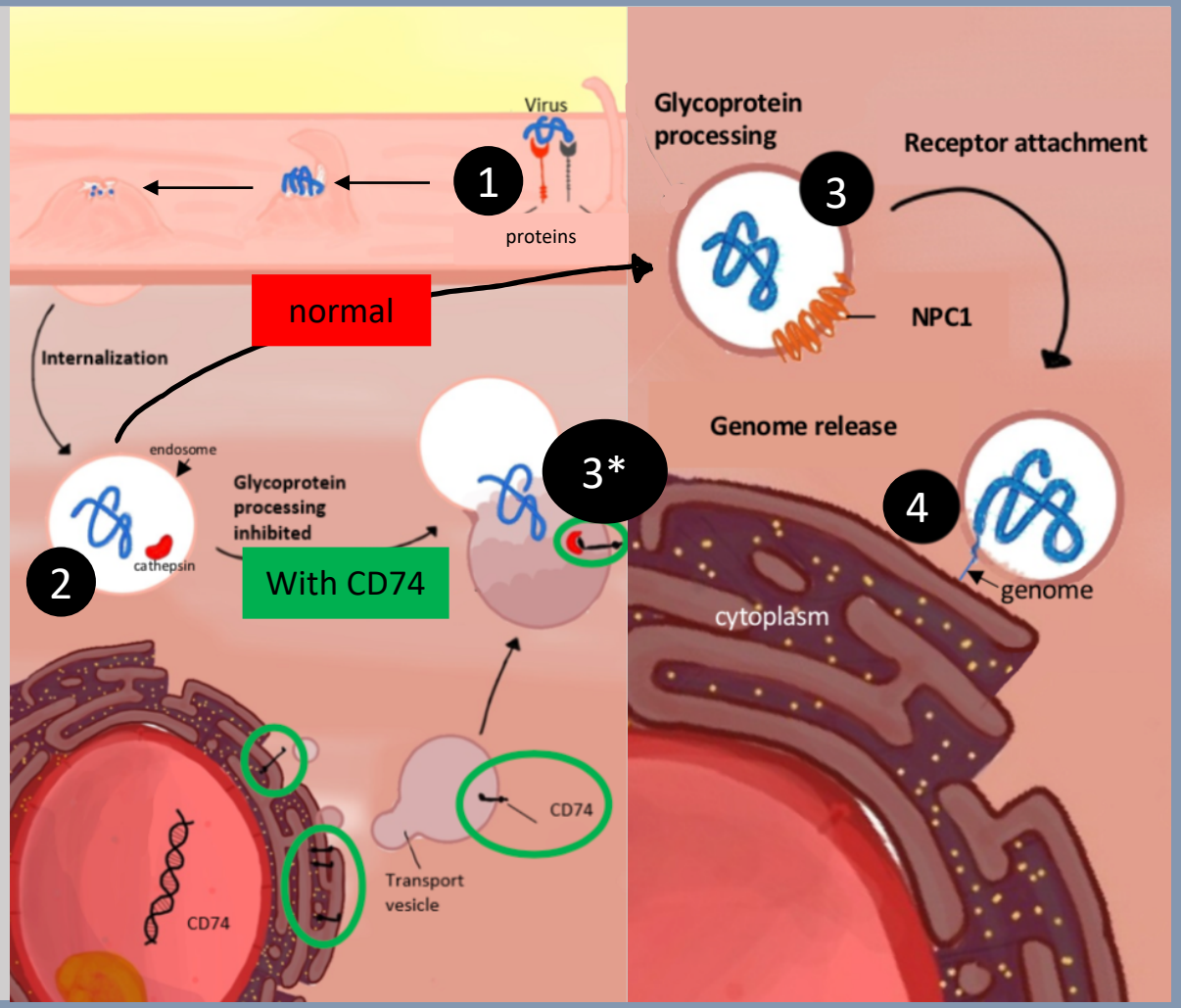
Ebola virus cell entry
(similar to SARS-CoV-2)
Viruses must enter into the host cell to replicate

Normal process:

1. Proteins bind the virus
2. Cathepsin splits the glycoprotein when it reaches the endosome
3. The splitted glycoprotein, together with NPC1 allows fusion with endosomal membrane
4. Genome release into cytoplasm

With CD74
(Result of the study)

3.*- Fusion between the transport vesicle and the endosome
- CD74 blocks the cathepsins
→ No fusion with endosomal membrane
→ no genome release
→ no viral replication



Glossary

Host cells: cell that is infected by viruses and used for reproduction
Cathepsin: enzymes which can split up proteins
Glycoprotein: composition of proteins and carbohydrates
NPC1: gene / helps fusion
Genome: genetic material of an organism
Cytoplasm: material within the cell expect the cell nucleus

Relevance

- Understand origin and development of viral diseases
- Inform the development of therapeutics against viruses
- Combat diseases caused by viruses

Source

Wells AI, Coyne CB. Inhibiting Ebola virus and SARS-CoV-2 entry. Science. 2020 Oct 9;370(6513):167-168. doi: 10.1126/science.abe2977. PMID: 33033203.