

NVML Focus op stolling 2023

Infectie en de rol van bloedplaatjes bij stolling en afweer

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Persoonlijke achtergrond

- Moleculaire biologie (Universiteit Groningen, 2006)
- Promotieonderzoek griepvirus (ErasmusMC Rotterdam, 2014)
- Onderzoeker in:
 - EMC Rotterdam (2015)
 - Veterinaire universiteit Hannover (2017)
 - Fac. Diergeneeskunde UU en UMCU Utrecht (2019)
- R&D onderzoeker Gezondheidsdienst voor Dieren (2019 – heden)

Dokter dokter, wat is je diagnose?

Casus 1

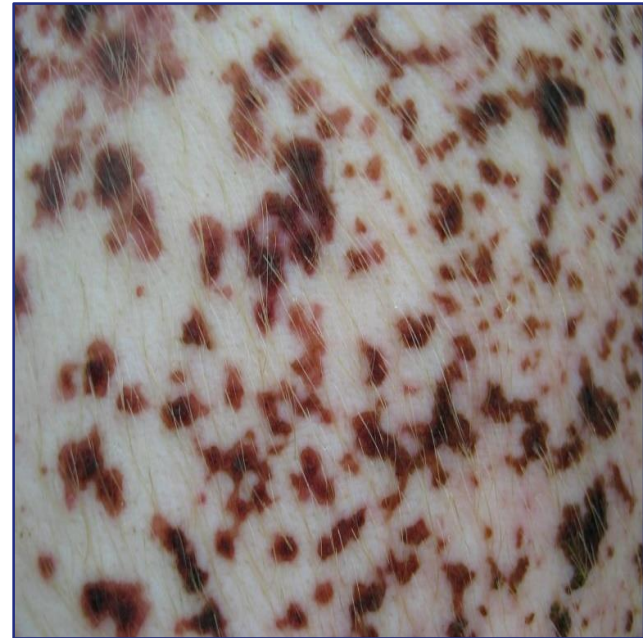
MENS



Dengue

Casus 2

VARKEN

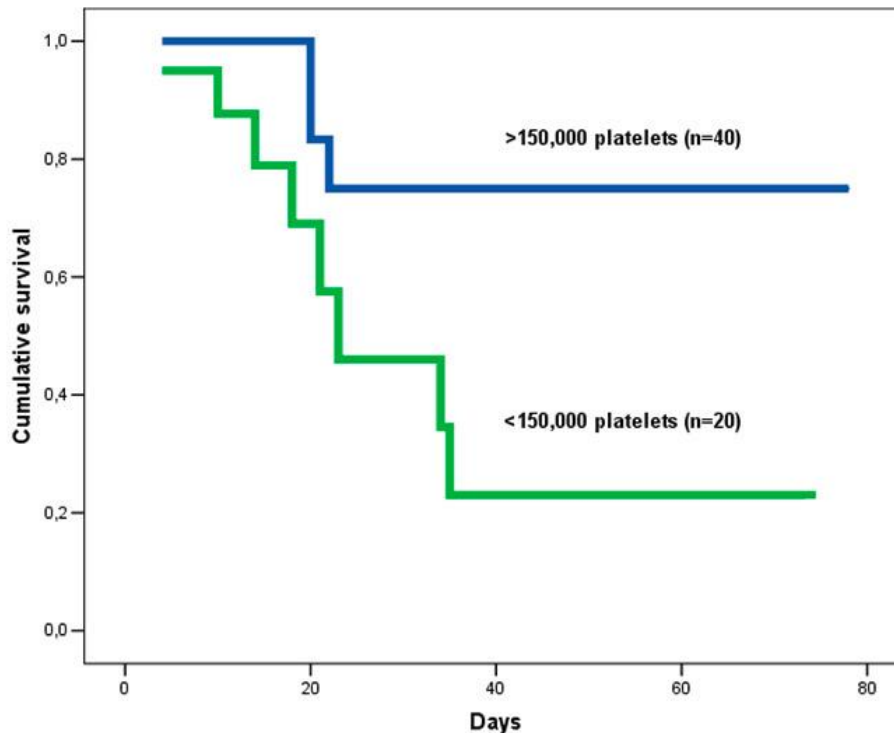


Varkenspest

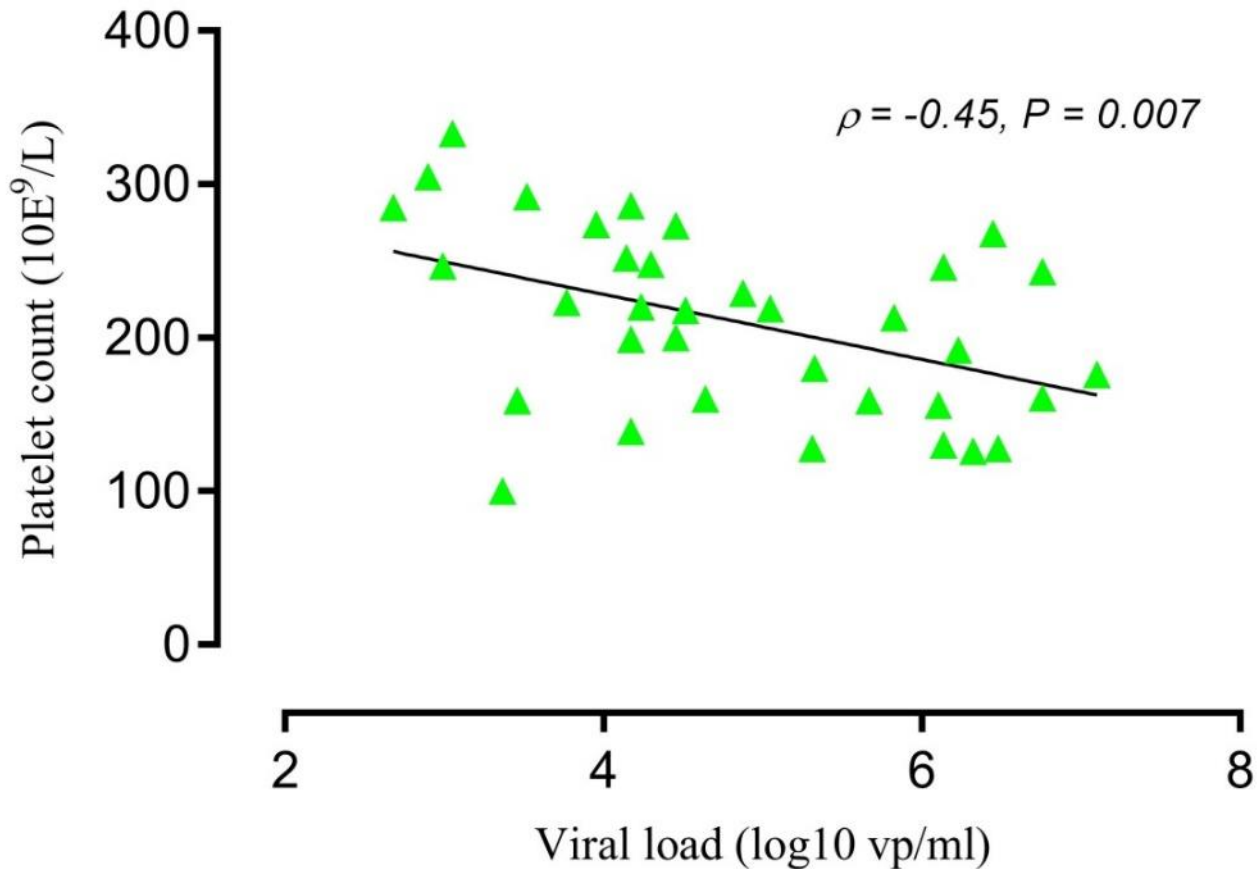
Puntbloedingen (Petechiae/purpura) door **trombocytopenie**

Thrombocytopenia as a mortality risk factor in acute respiratory failure in H1N1 influenza

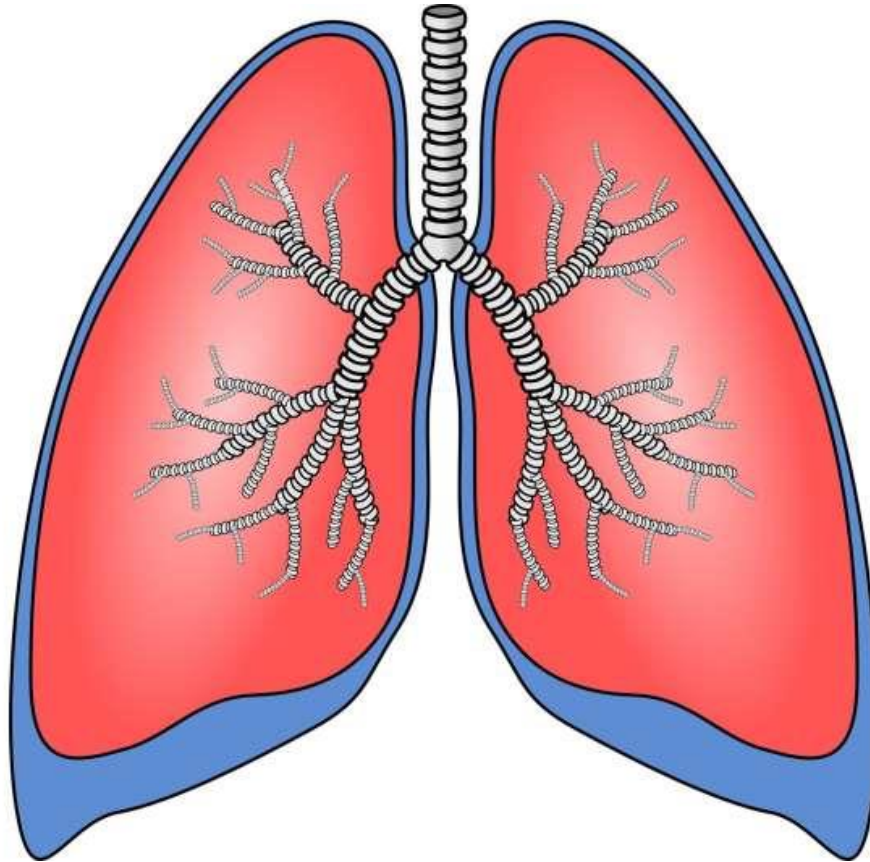
Cumulative survival rate of H1N1 influenza respiratory failure patients with thrombocytopenia.



Associatie tussen griep en plaatjes

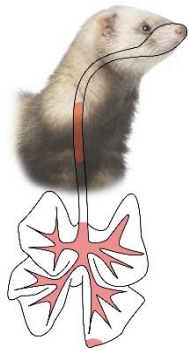


Zie de longen als.....

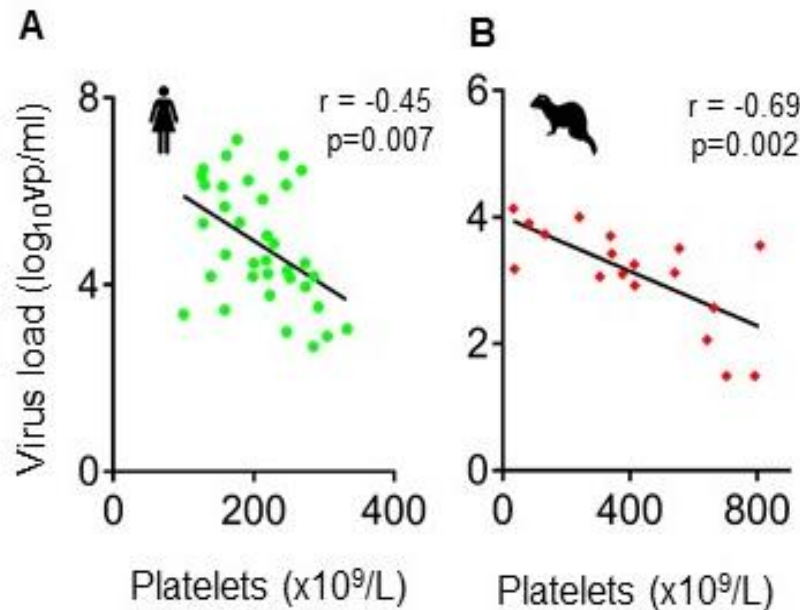


Vraag: Kunnen we trombocytopenie nabootsen in een diermodel?

De proef



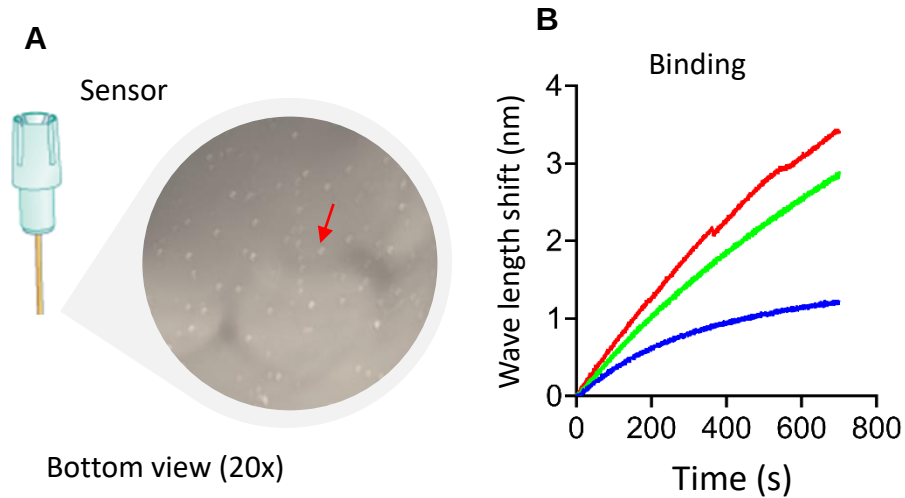
During influenza: platelets are 'consumed' causing acute thrombocytopenia¹



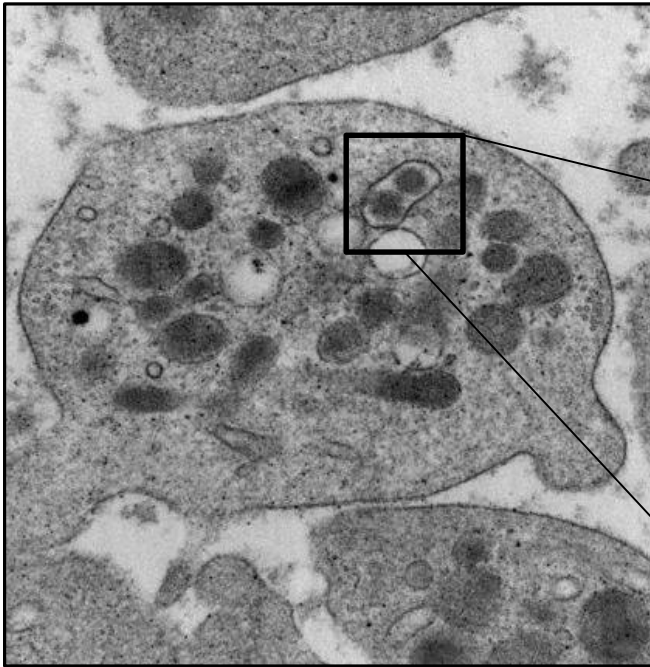
- In human, **800 billion** platelets are consumed within 3 days after onset of influenza symptoms^{1,2}
- The degree of thrombocytopenia is subtype-dependent and increases with virus pathogenicity

Vraag: wat is het mechanisme?

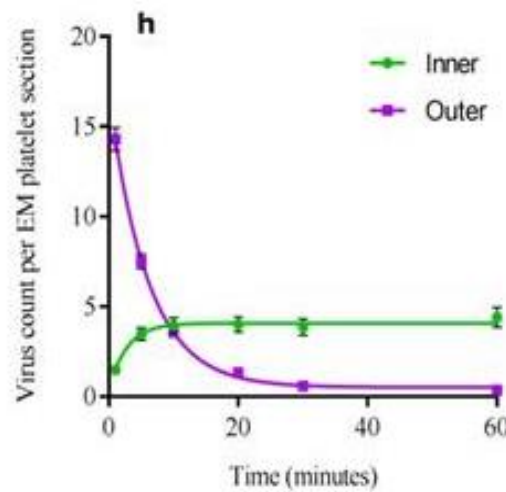
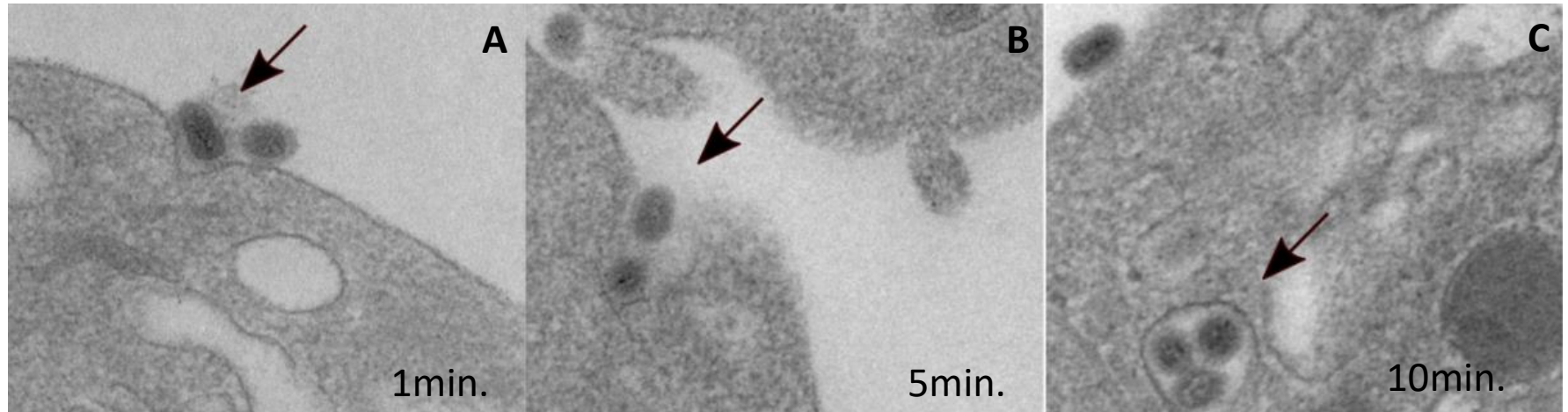
Griepvirussen binden plaatjes



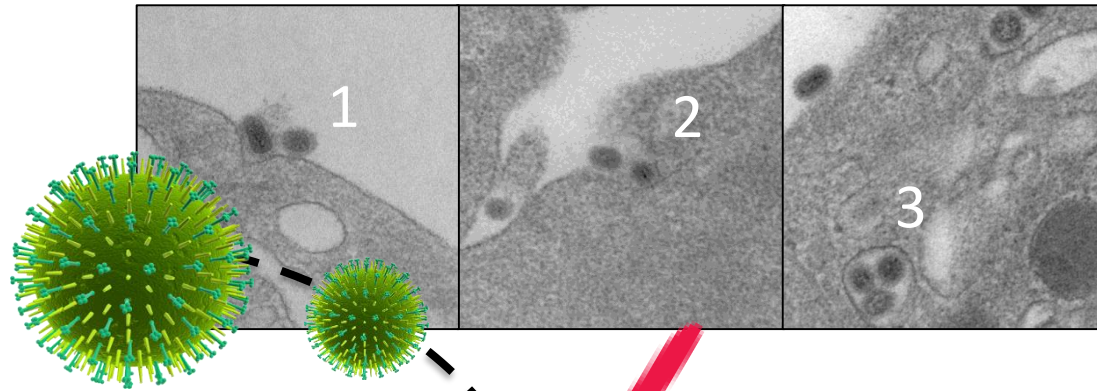
Plaatjes nemen griepvirussen op uit de longen



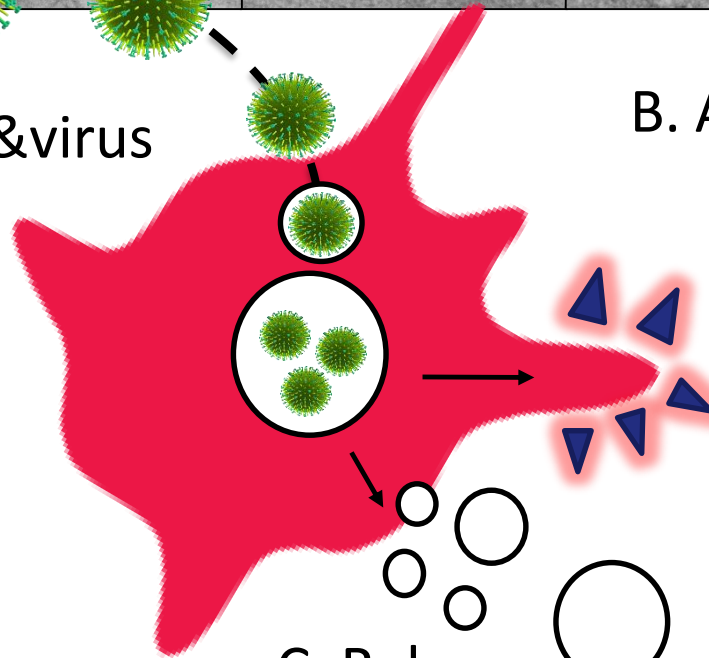
Dit is een zeer actief proces



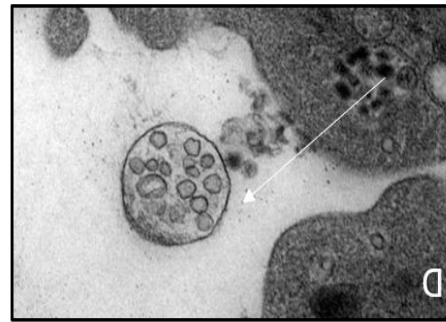
A. Uptake



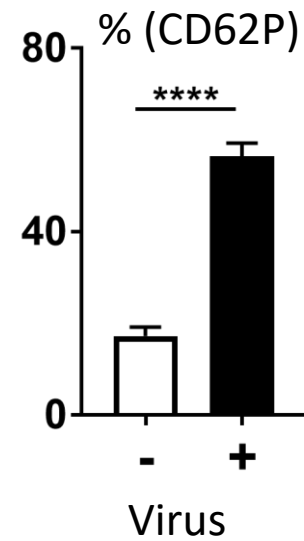
E. Platelet&virus



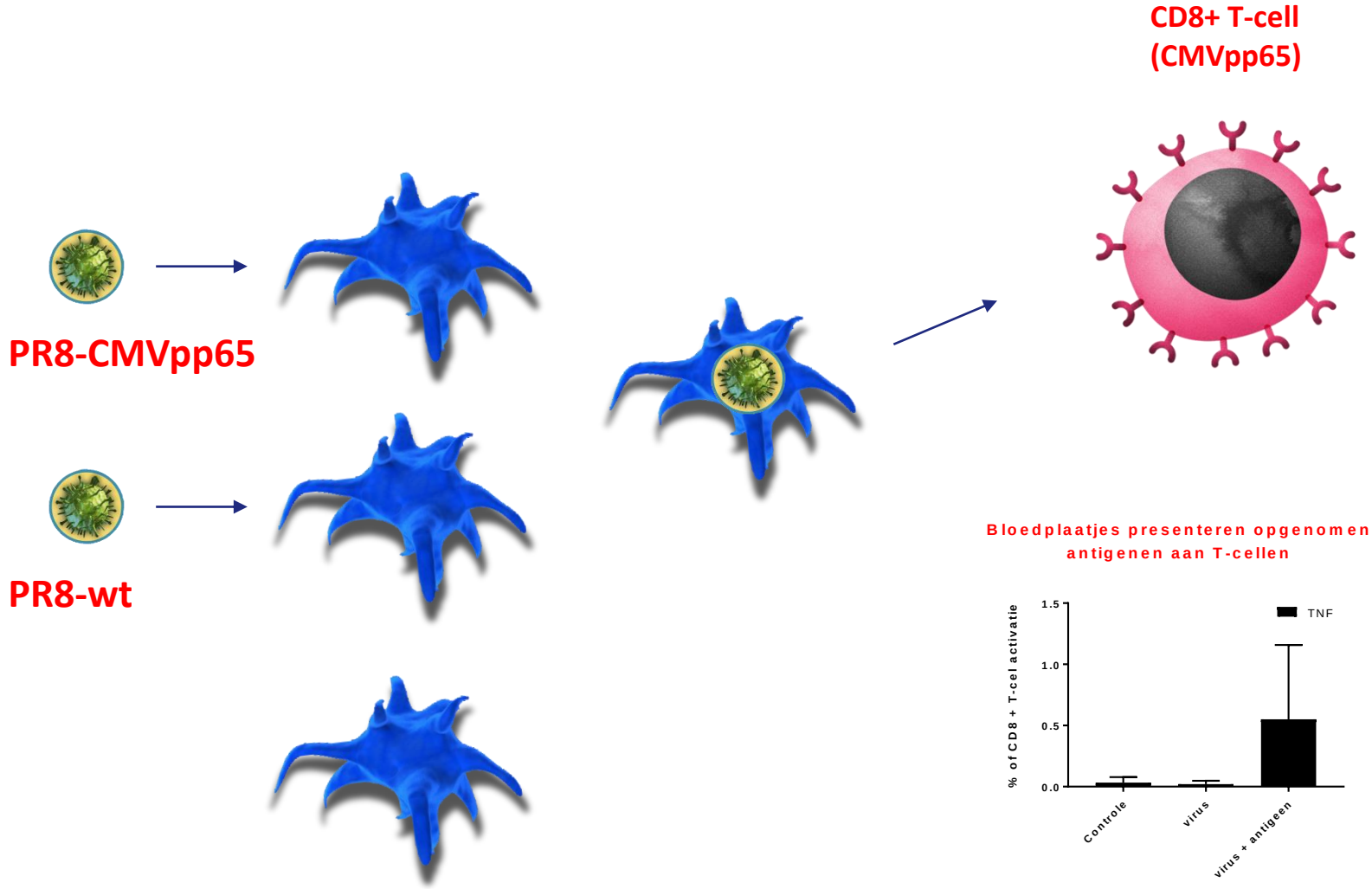
C. Release



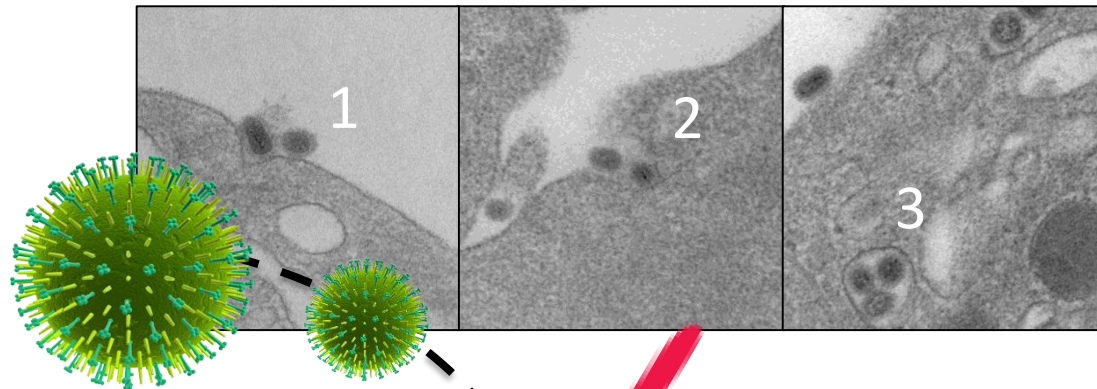
B. Activation



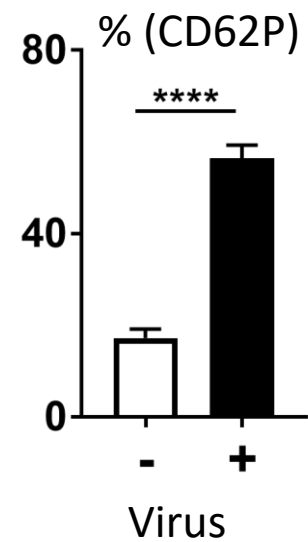
Platelets present influenza virus cargo antigens to CD8+ T-cells



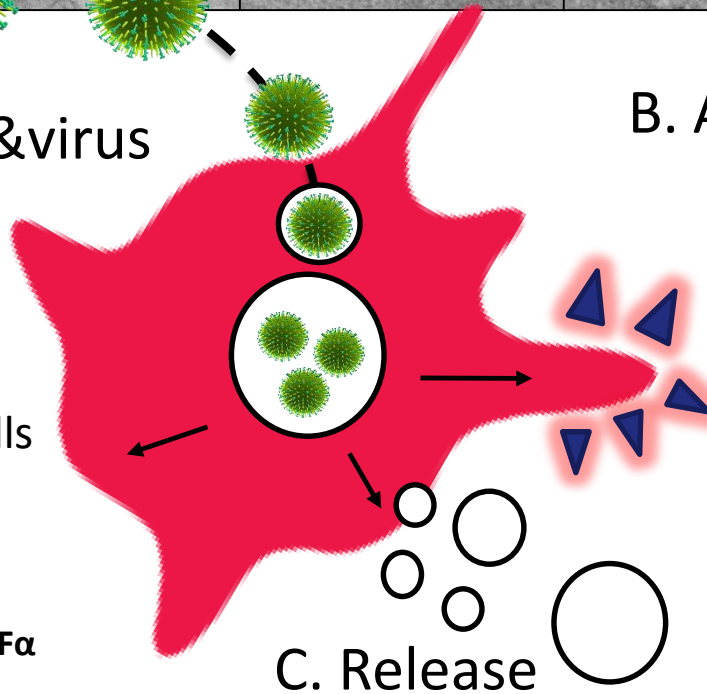
A. Uptake



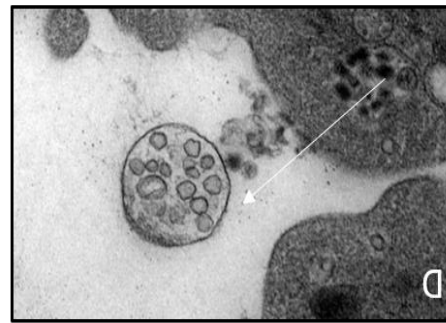
B. Activation



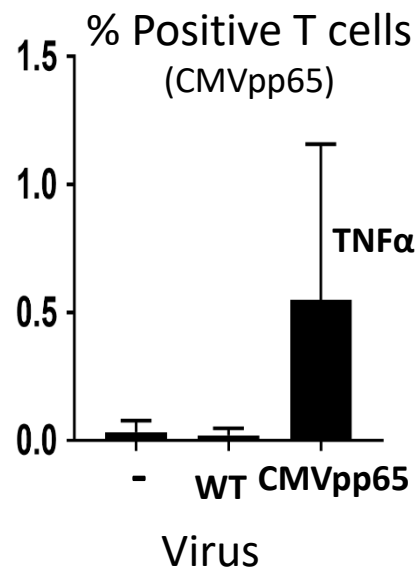
E. Platelet&virus



C. Release

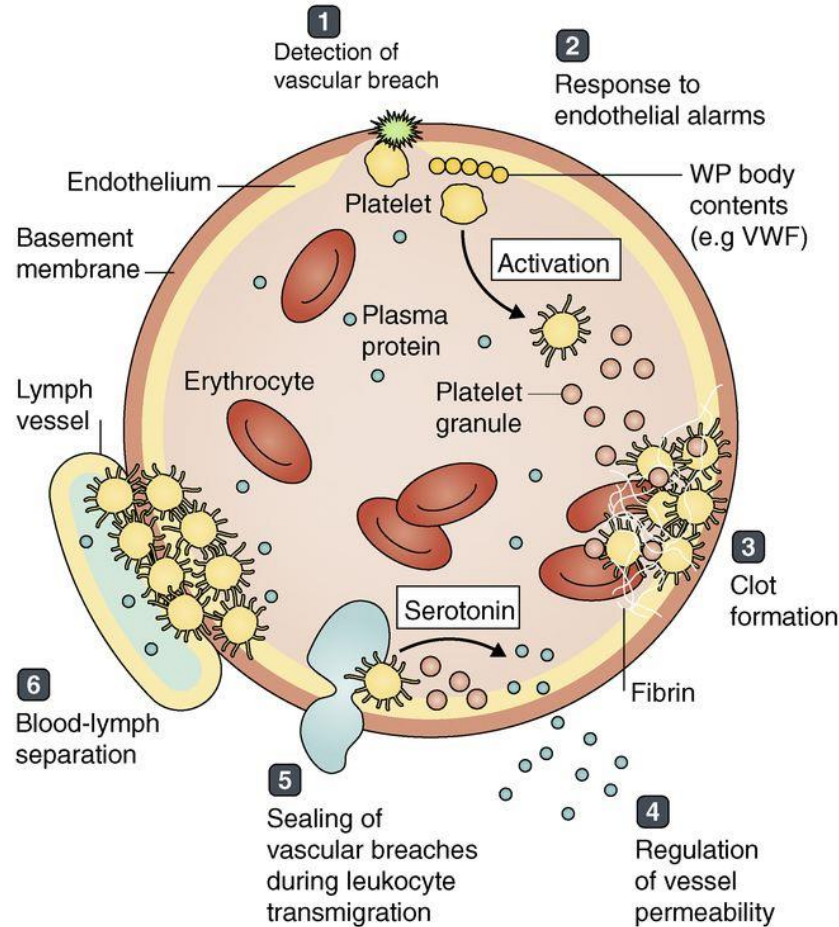


D. Signalling



Major platelet tasks in haemostasis and immunity.

A Hemostasis



Plaatjes en immuniteit

Recent bewijs toont aan dat plaatjes een directe rol spelen bij:

- 1) Bestrijding van virale/bacteriele binnendringers
- 2) Immune cellen aantrekken en activeren
- 3) Antigen presentatie moduleren (MHC class-I presentation)
- 4) Een boost geven aan het adaptieve immuunsysteem

Take home message:

Focus op stolling EN afweer:

“Plaatjes zijn de ondergewaardeerde dirigenten van ons immuunsysteem”

(Ali, Wuescher, & Worth, 2015)