

REC lobe

NUC lobe

Guide RNA

Target DNA

CRISPR/Cas en IMMUNITEIT zichtbaar maken in de klas

CASPAR GERAEDTS & INGEBORG VAN DER NEUT



LUDGER
COLLEGE



VRIJE
UNIVERSITEIT
AMSTERDAM

IS VERDER KIJKEN

PAM Non-target
DNA strand

PROGRAMMA

wat?

CRISPR/Cas9

- CRISPR/Cas9 in *E.coli*
- genome editing met CRISPR/Cas9
- gene drive met CRISPR/Cas9

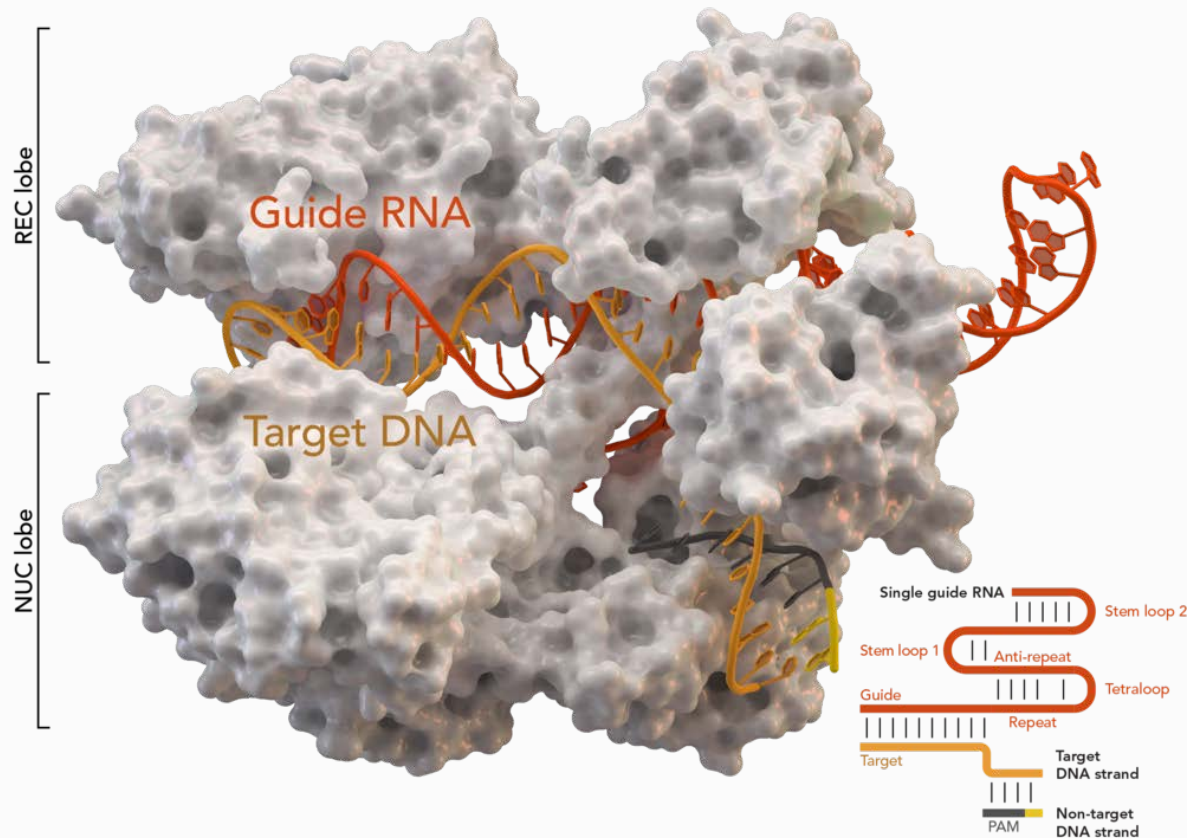
IMMUNITEIT

hoe?

kort praatje...

daarna **uitbeelden**
(begrijpen met je handen)

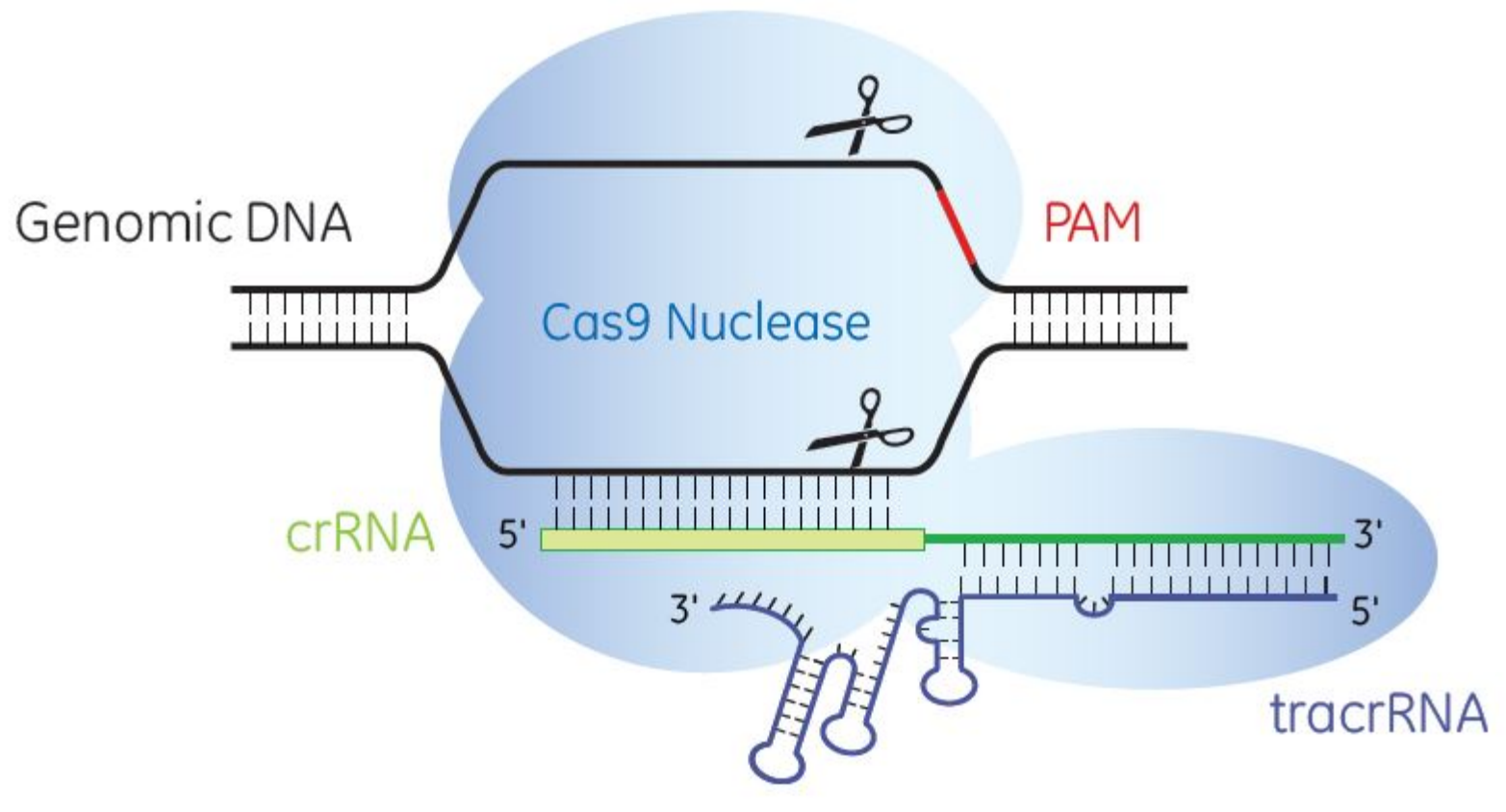
Cas9



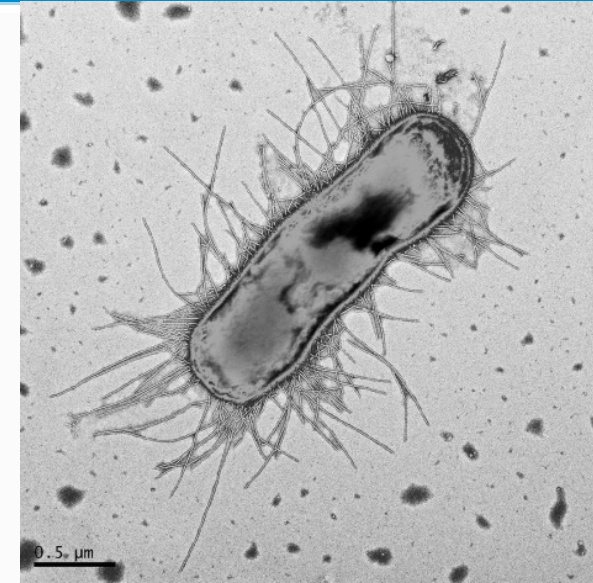
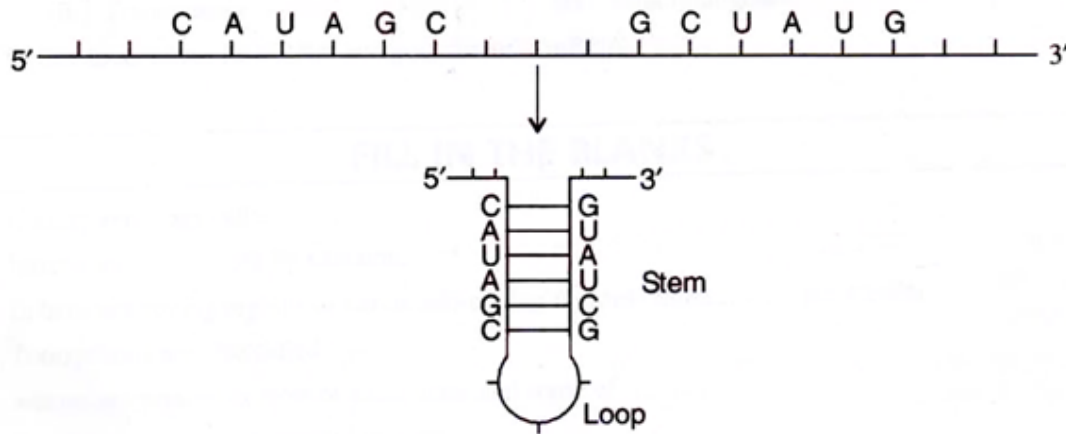
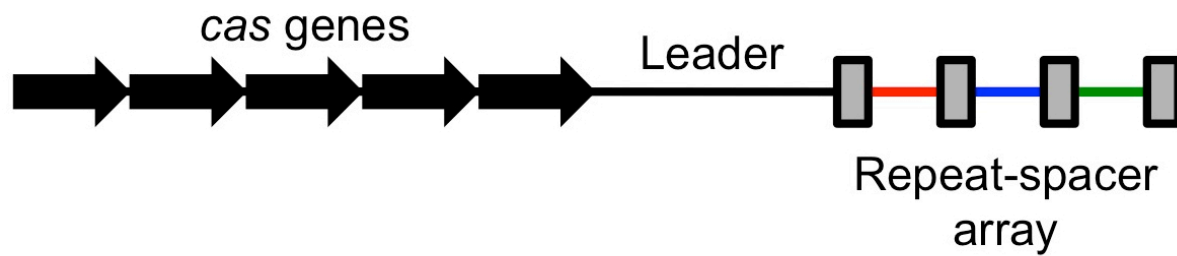
Cas9 kan...
heel *precies* knippen
waar je maar wil...

... door
de combinatie van
nuclease en gRNA.

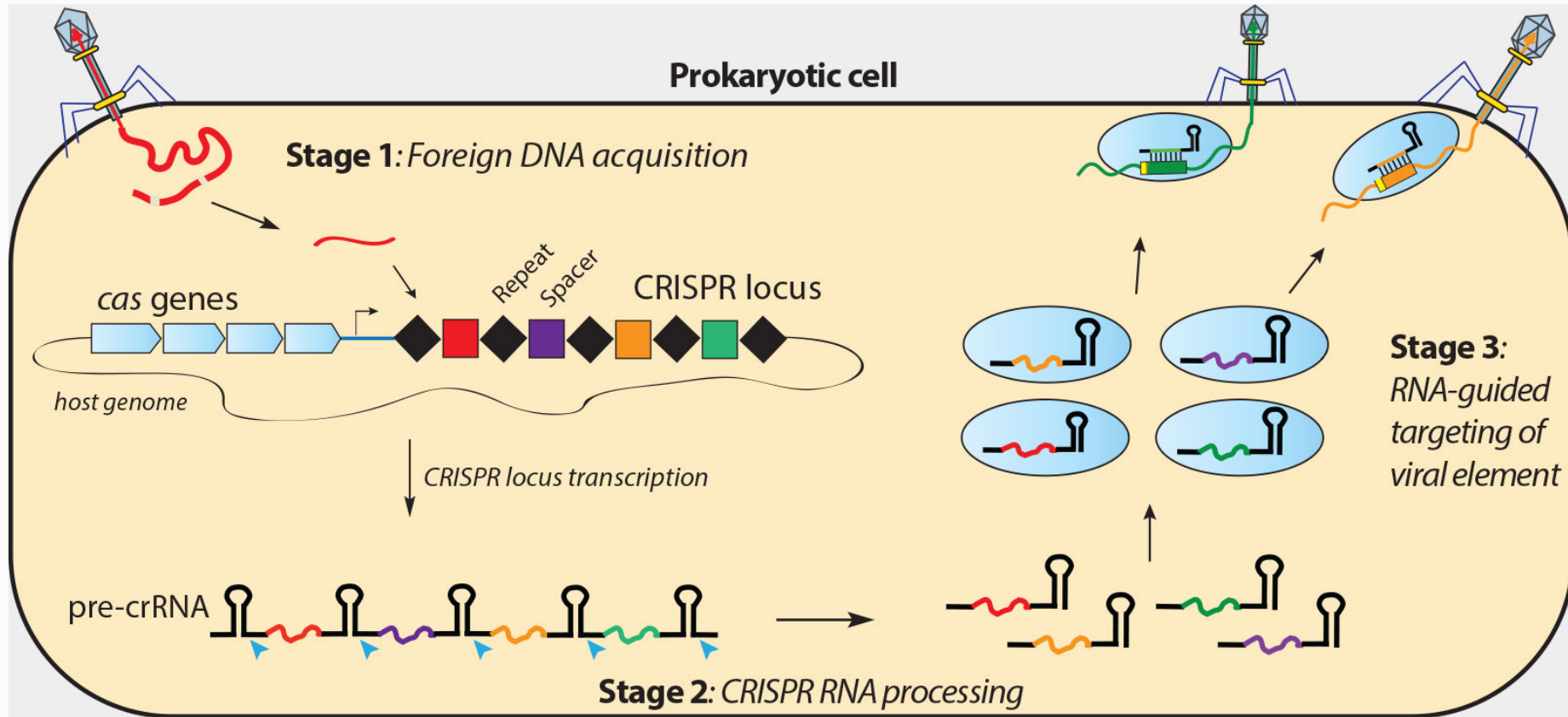
Cas9



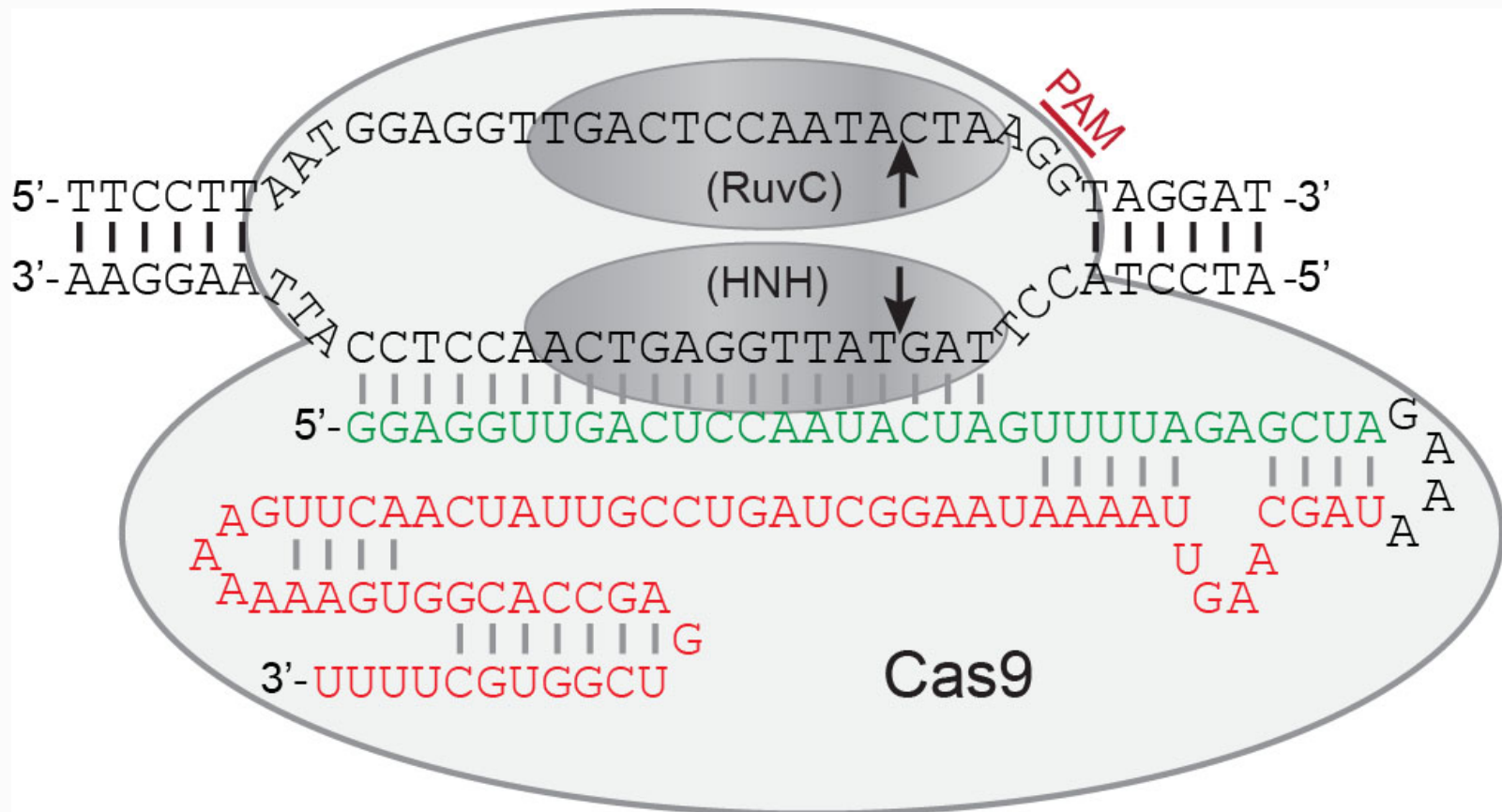
CRISPR/Cas in *E. coli*



CRISPR/Cas in *E. coli*

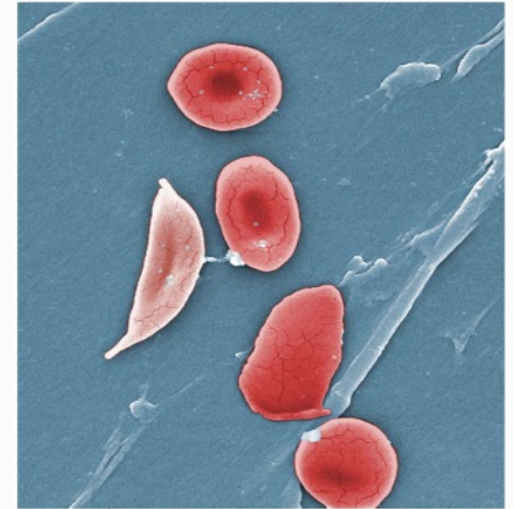


CRISPR/Cas in *E. coli*

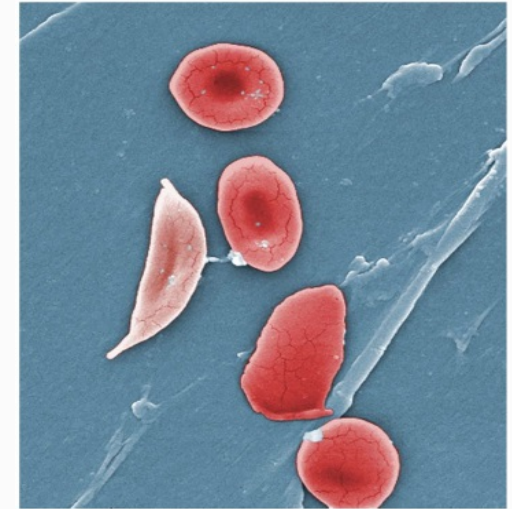
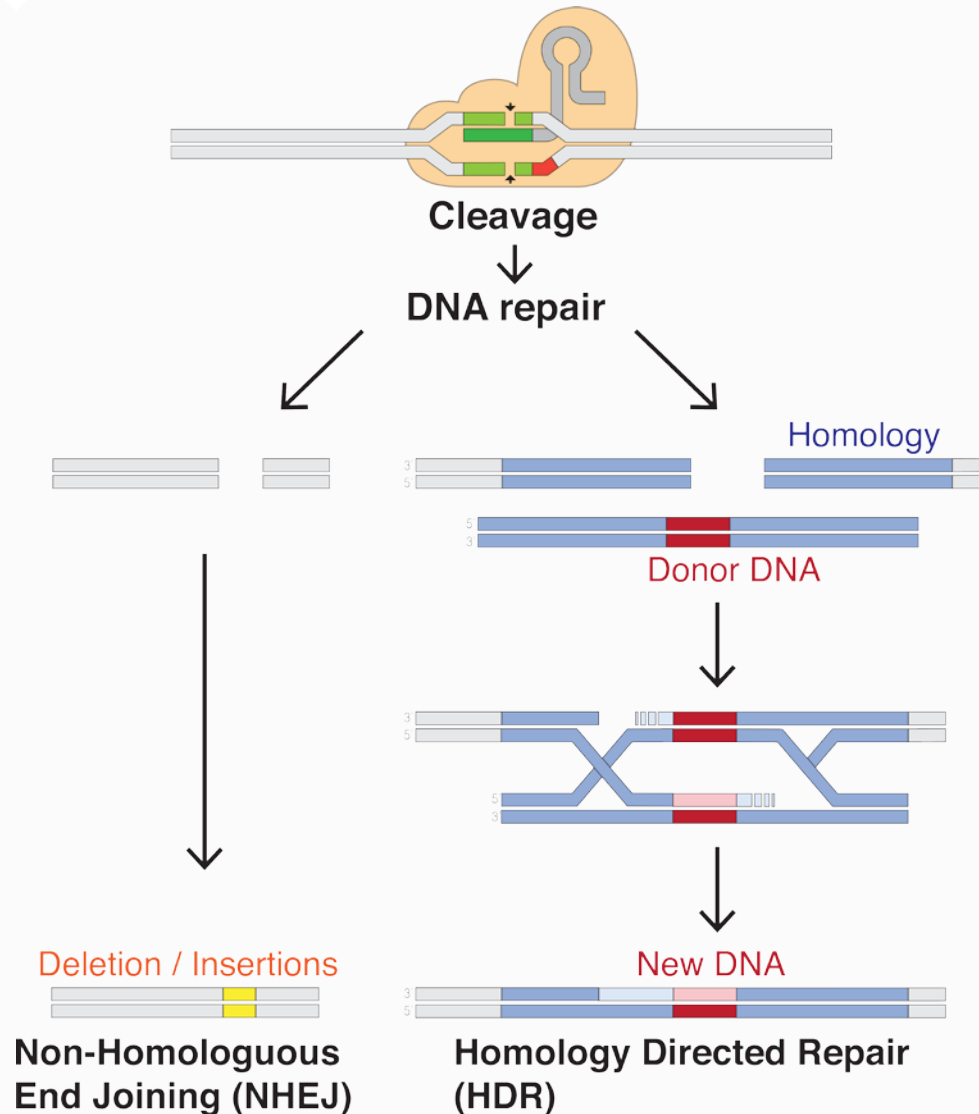


genome editing met CRISPR/Cas

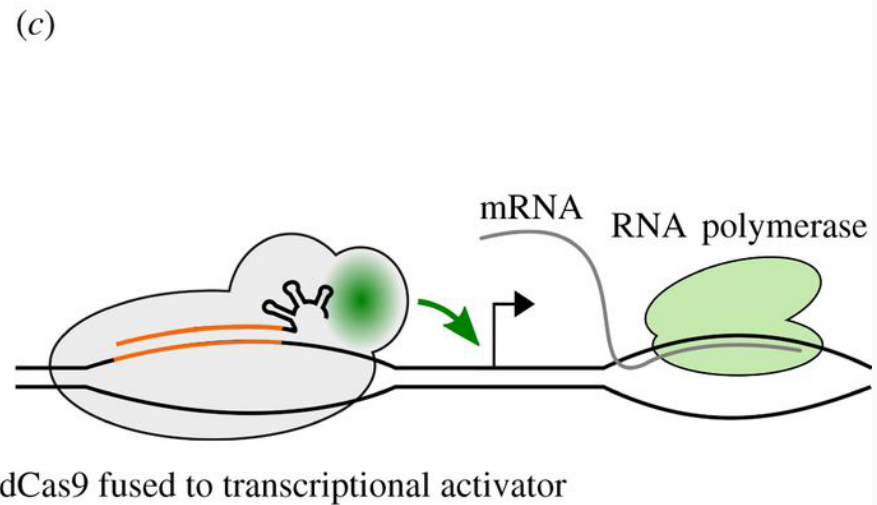
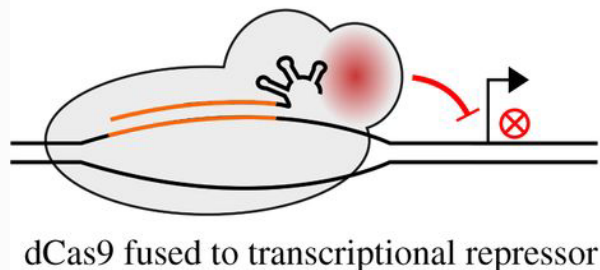
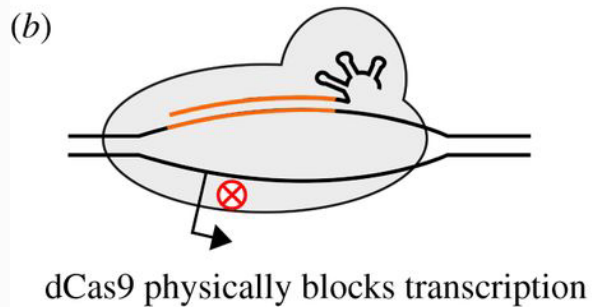
Ontwerp nu zelf een stuk gRNA
(van 20 nt spacer + scaffold)
waarmee Cas9 in het gen
voor hemoglobine kan knippen.
Hou rekening met de PAM's!



genome editing met CRISPR/Cas

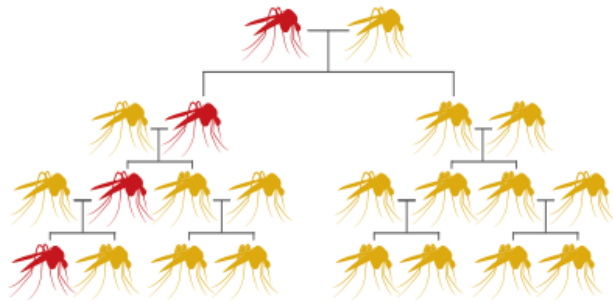


genome editing met CRISPR/Cas



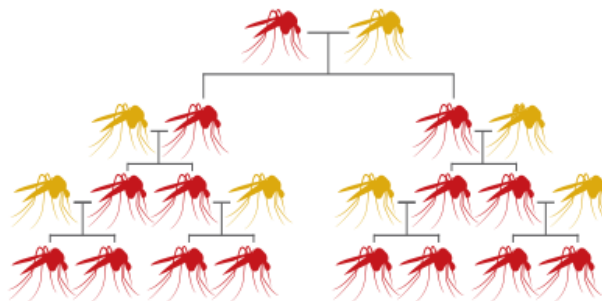
gene drive met CRISPR/Cas

Normal inheritance



Altered gene does not spread

Gene drive inheritance



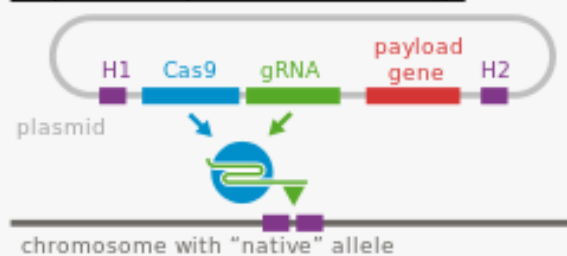
Altered gene is almost always inherited



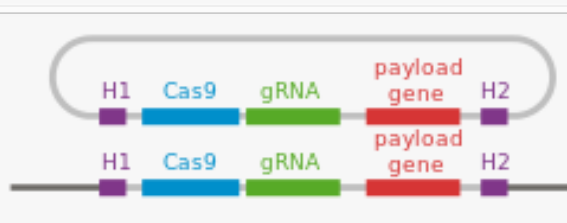
gene drive met CRISPR/Cas

exogeneous insertion

step 1: site-specific DNA cleavage

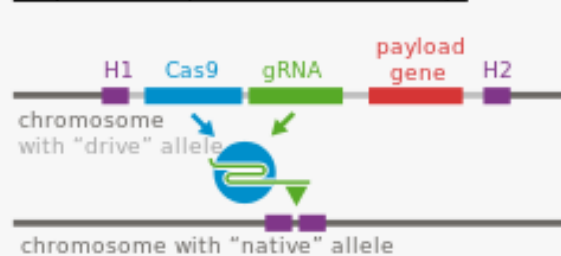


step 2: Homology Directed Repair (HDR)

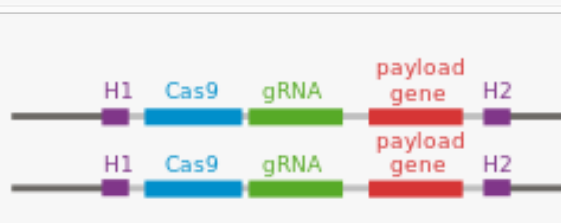


propagation after sexual reproduction

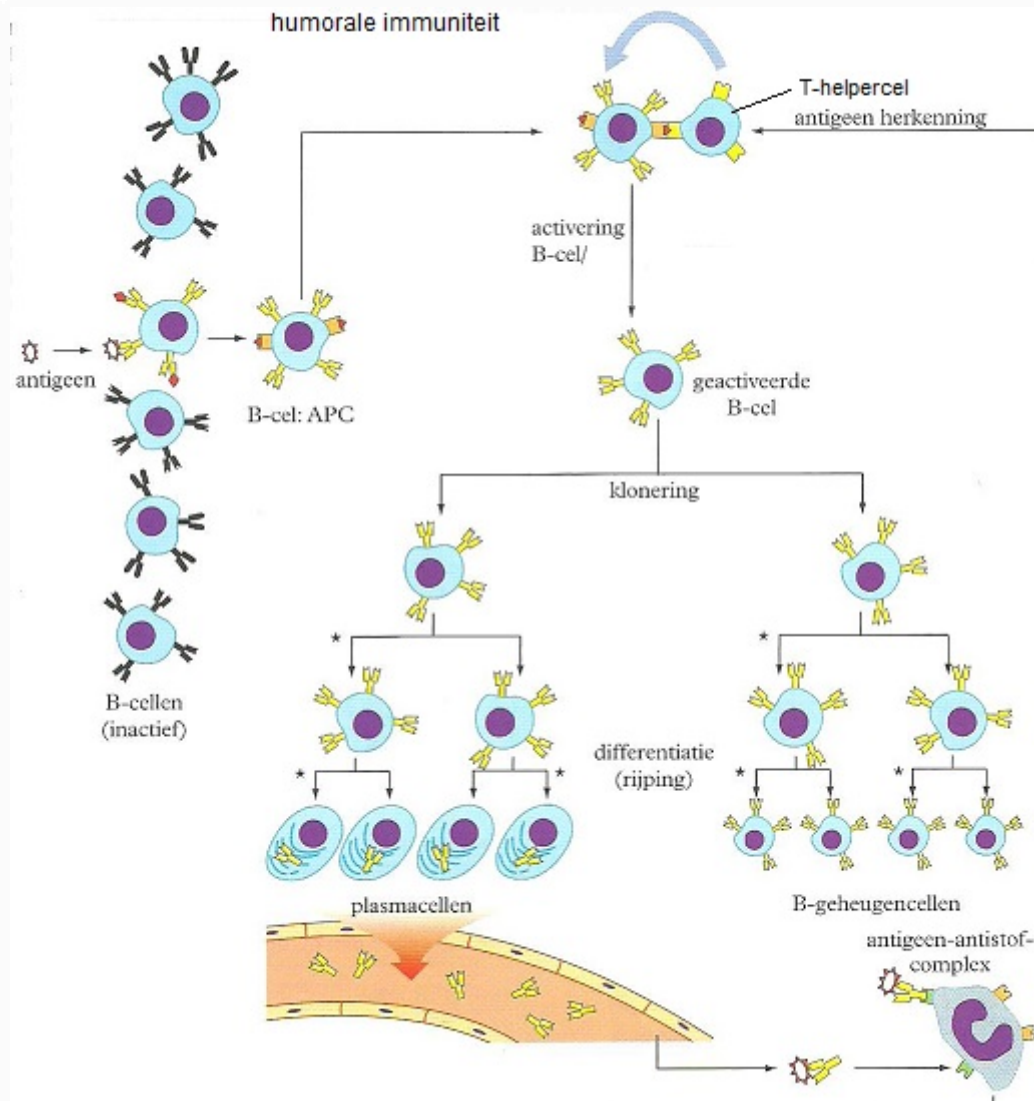
step 1: site-specific DNA cleavage



step 2: Homology Directed Repair (HDR)



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PRAKTISCH

stempelset DNA bestellen?

www.itsacademy.nl/stempelset-dna/

of nu hier beneden op de markt

Lego kopen?

www.bouwsteenwinkel.nl

Bitjes kopen?

<http://nl.aliexpress.com/>

meer informatie over uitbeeldpractica?

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en bekijk online het materiaal van onze eerdere workshops op de voorgaande NIBI-conferenties.