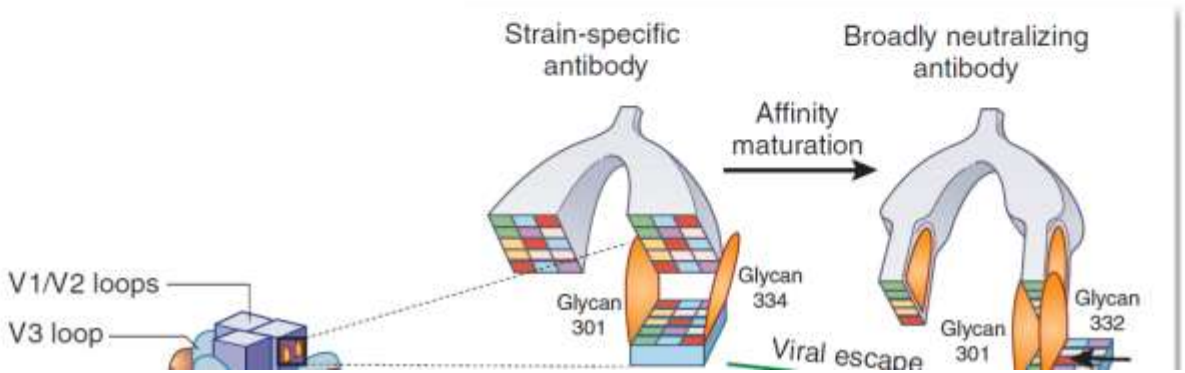
A sweet surprise for HIV broadly neutralizing antibodies

Johannes P M Langedijk & Hanneke Schuitemaker

The production of cross-reactive neutralizing antibodies is the ultimate goal in HIV vaccine development, but no immunogen other than HIV itself has been able to elicit this type of humoral immunity. In natural HIV infections, these antibodies take several years to develop. A new study sheds light on what may be causing this delay in neutralizing antibody development (aaa–bbb).^

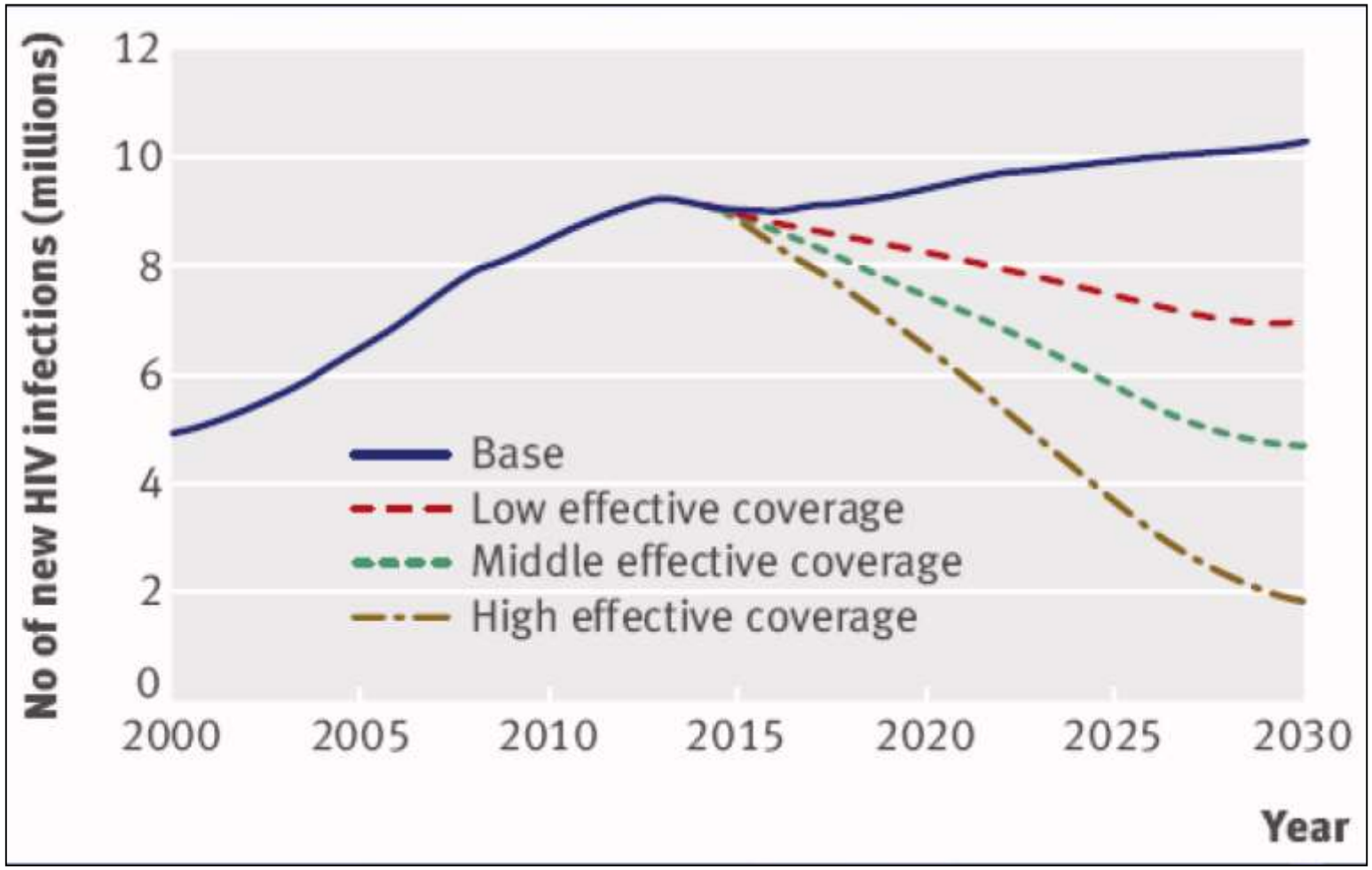
PR1

The HIV-1 envelope spike, composed of gp120 and gp41 trimers, is extremely variable, which challenges the design of a vaccine that needs to protect against the majority of, if not all, circulating HIV-1 strains. The only conserved protein surfaces on the envelope spike that can be targeted by broadly neutralizing antibodies are the relatively recessed receptor-binding site and a transiently exposed hydrophobic membrane-proximal external region (MPER) at the base of the spike's stem. The remaining



Nature Medicine 2012

Efecto de una vacuna en el año 2015



¿Para cuándo una vacuna?

La vacunas para el VIH

Eight common misconceptions about HIV vaccines that may impede progress in controlling the AIDS epidemic

"The acceptability of future HIV vaccines is not guaranteed; in fact, achieving broad uptake becomes even more consequential in the case of partially efficacious vaccines, which are less acceptable to end users."

La vacuna tendrá problemas para revertir la epidemia…

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Editorial
Future Virology

The discovery of a safe and efficacious HIV vaccine would be among the most significant

the luxury of dealing with the mundane challenges of implementation. However, to identify

Cómo erradicar la infección VIH / sida

- **Reducir al mínimo los nuevos contagios**
- **Curar a los infectados**

Cómo erradicar la infección VIH / sida

- Reducir al mínimo los nuevos contagios
  - Vacuna preventiva
  - Cómo evitar nuevos contagios
    - Medidas preventivas
    - Diagnóstico y tratamiento precoz
- Curar a los infectados

Medidas que se han mostrado eficaces para prevenir la infección VIH

- Relación sexual protegida
- Circuncisión
- Profilaxis preexposición
  - Gel tópico (vaginal/anal)
  - Medicación oral
- Tratamiento como prevención

Los retos del futuro en la infección por el VIH

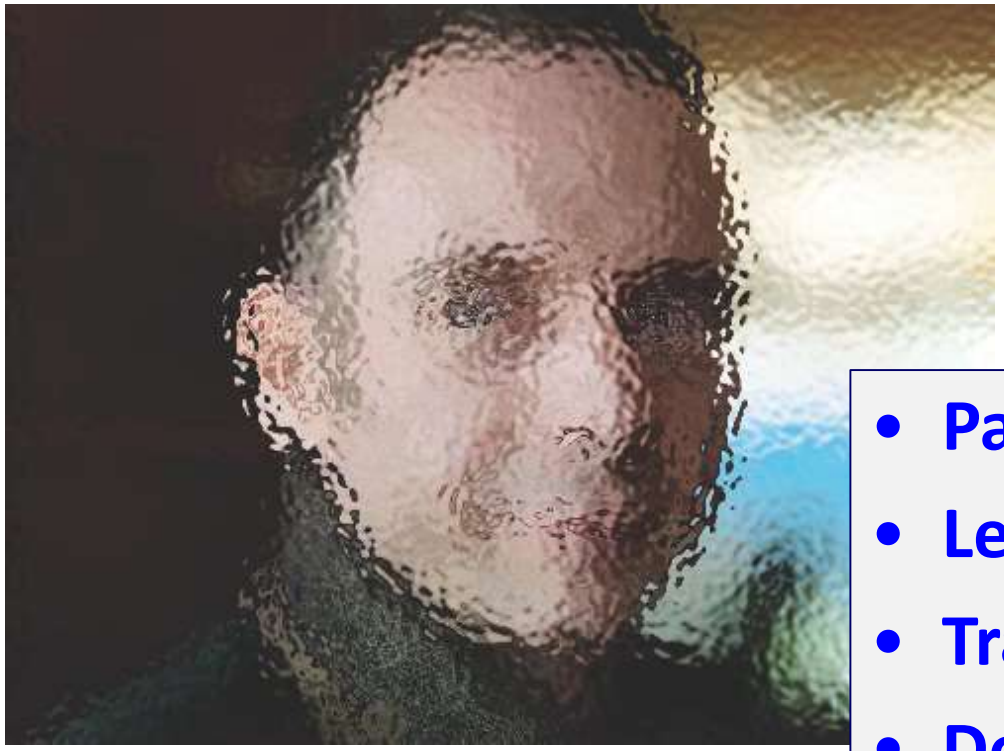
- …
- …
- Vacuna (fracaso)
- Curación

Curación o erradicación

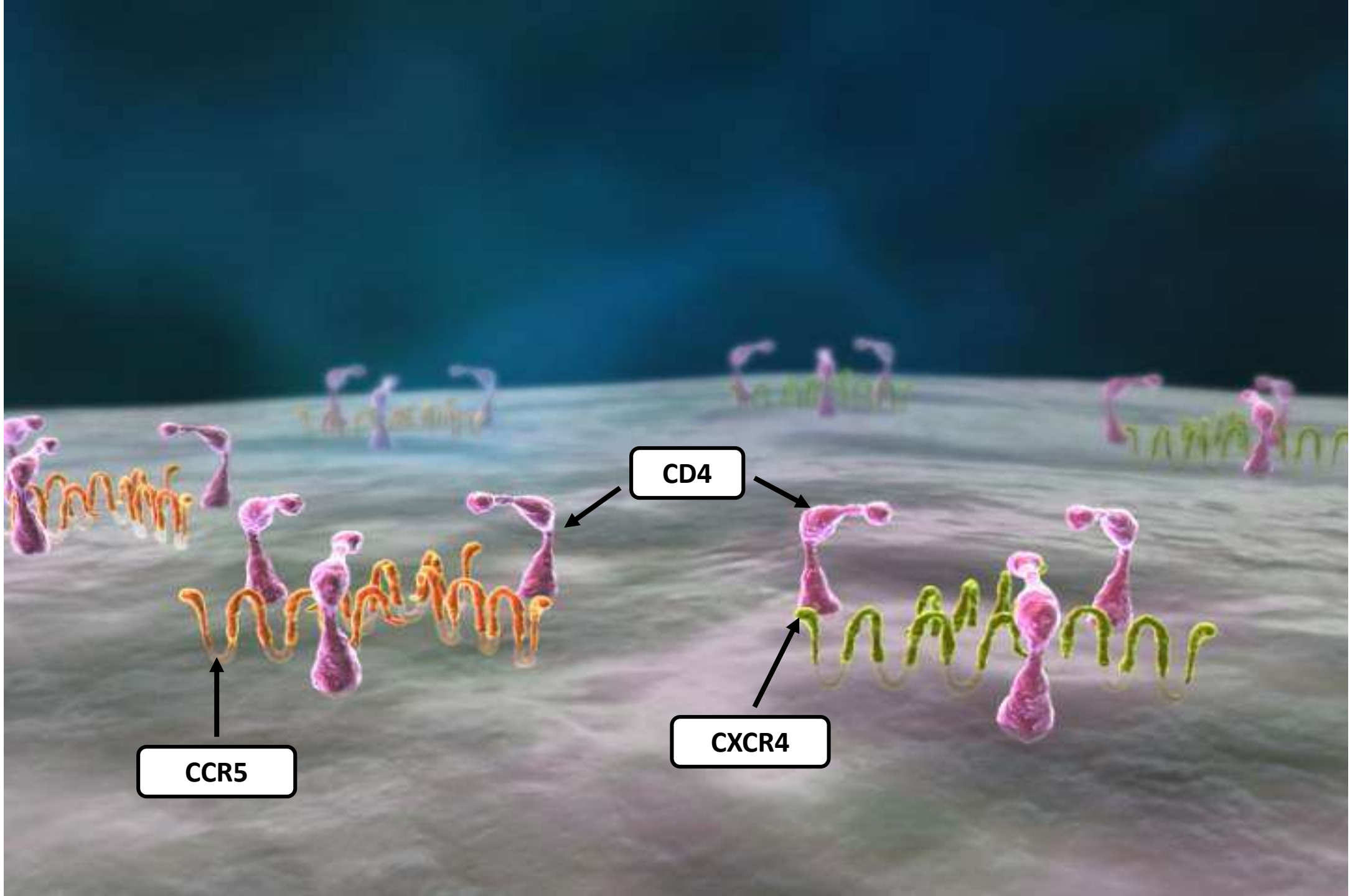
Estoy seriamente pensado en cómo curar el sida

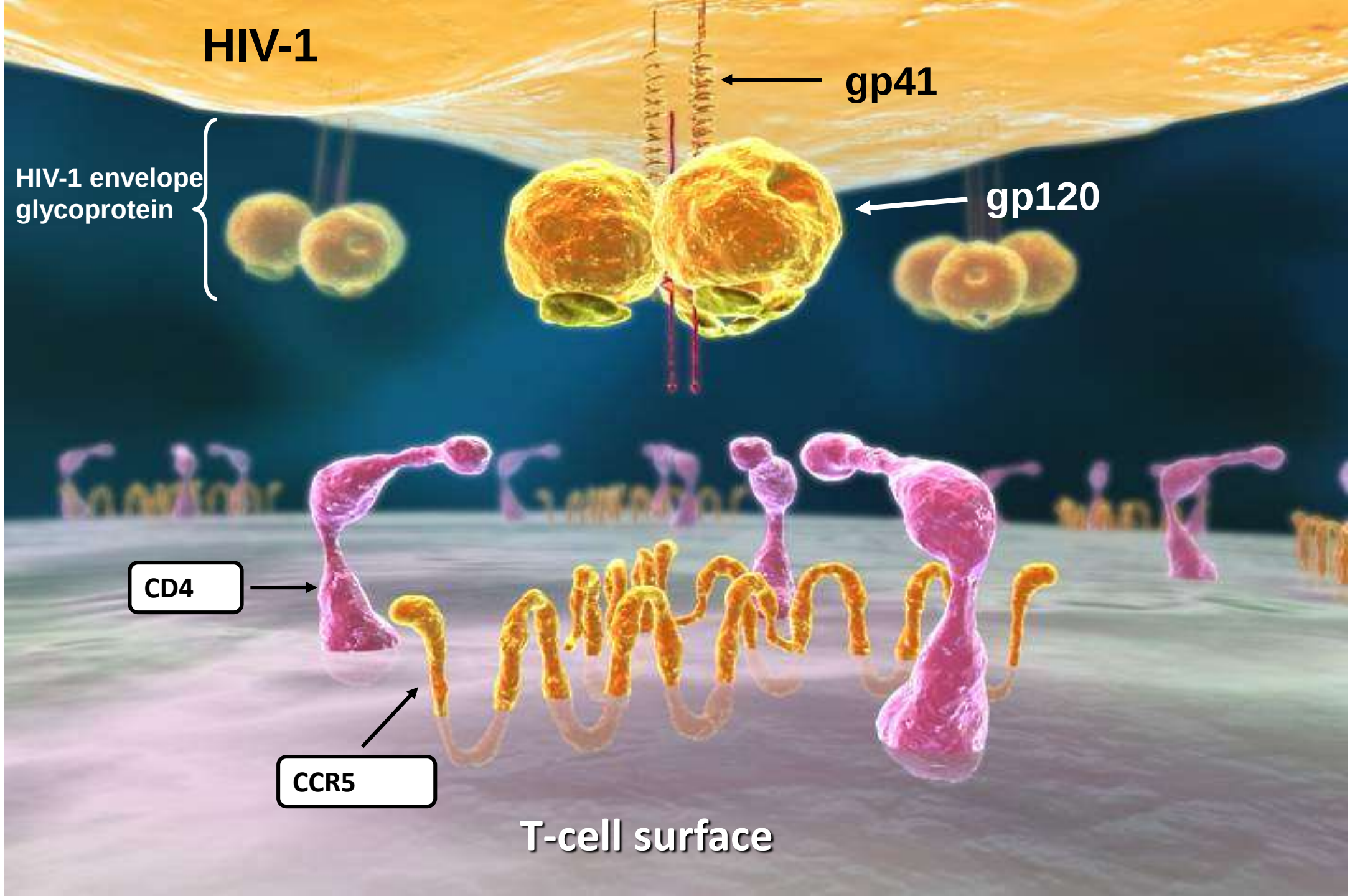
¿Se puede curar la infección VIH?

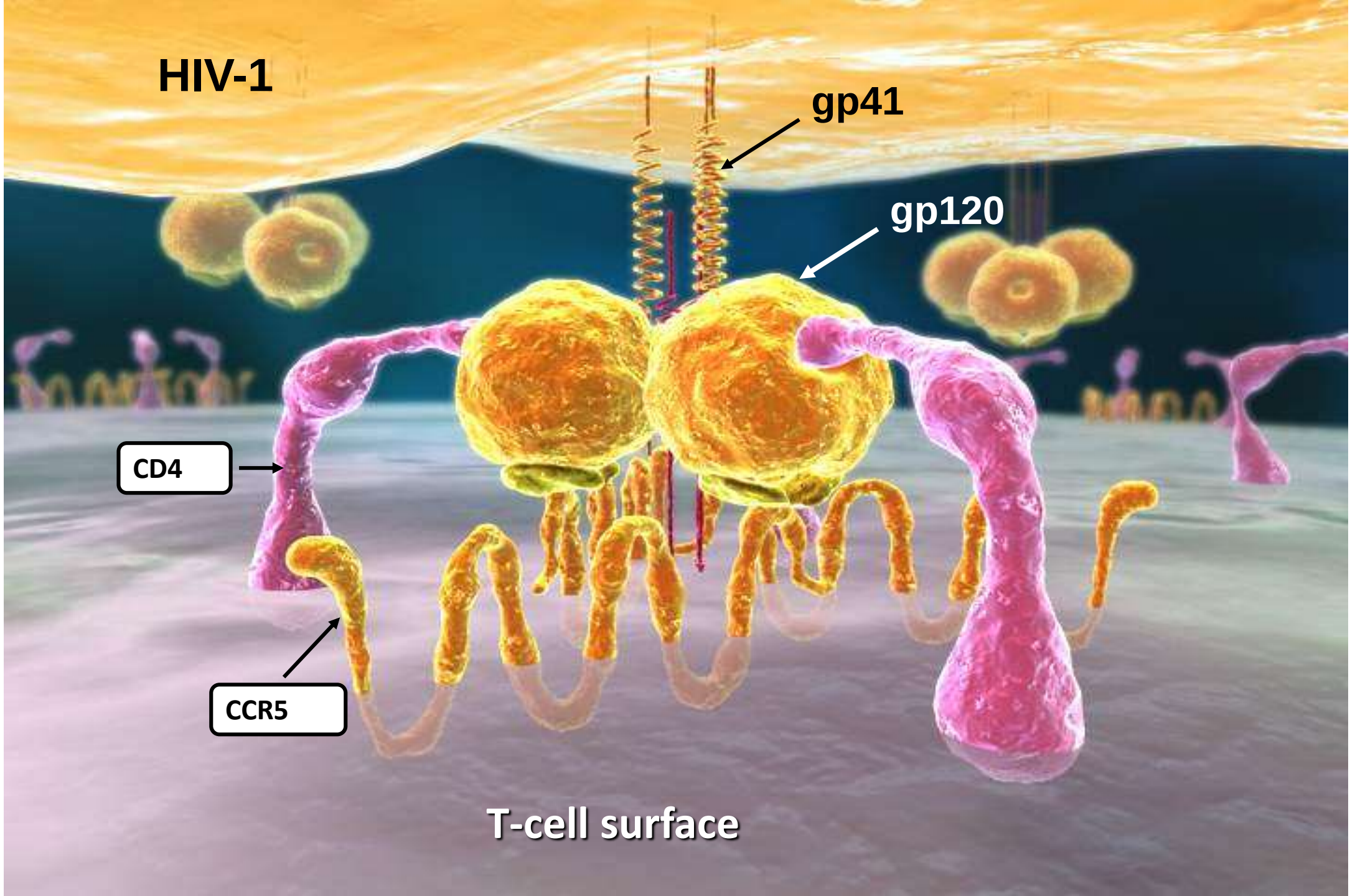
Primer caso de curación de la infección VIH
Timothy Brown (Paciente Berlín)



- **Paciente VIH positivo**
- **Leucemia mieloide aguda**
- **Trasplante de médula ósea**
- **Donante homozigoto delta-32**


CD4
CCR5
CXCR4


HIV-1
gp41
HIV-1 envelope glycoprotein
gp120
CD4
CCR5
T-cell surface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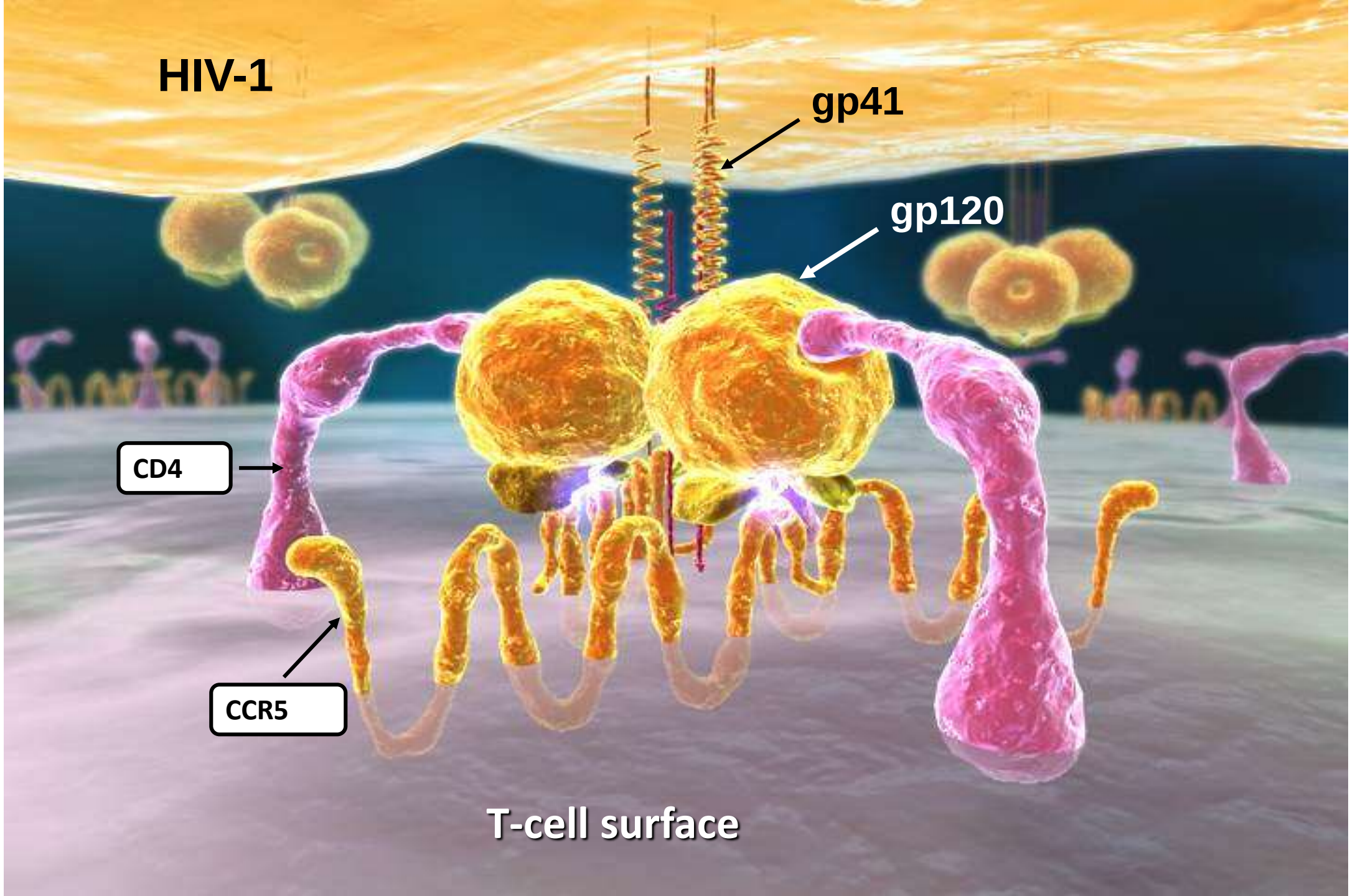
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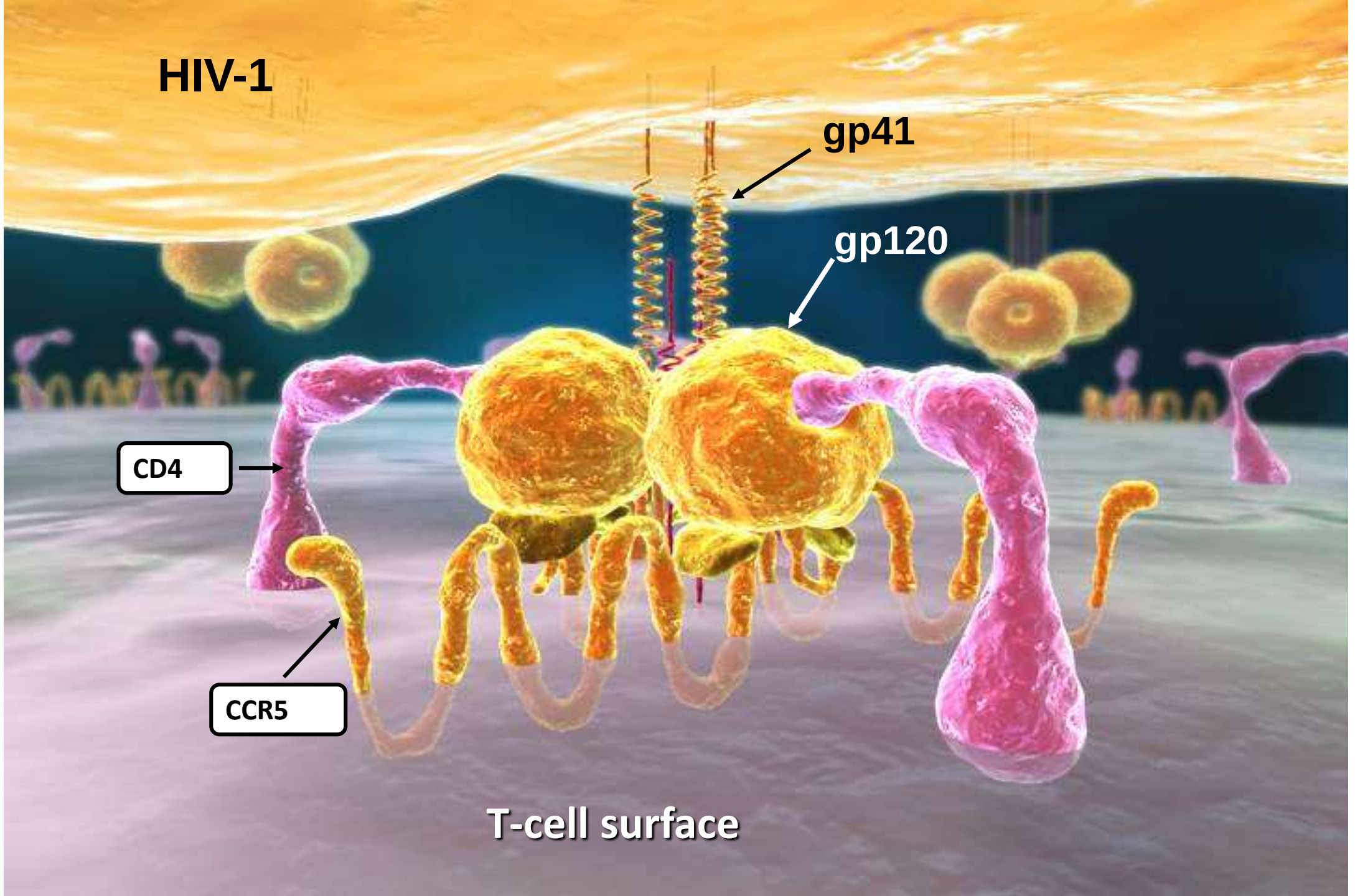
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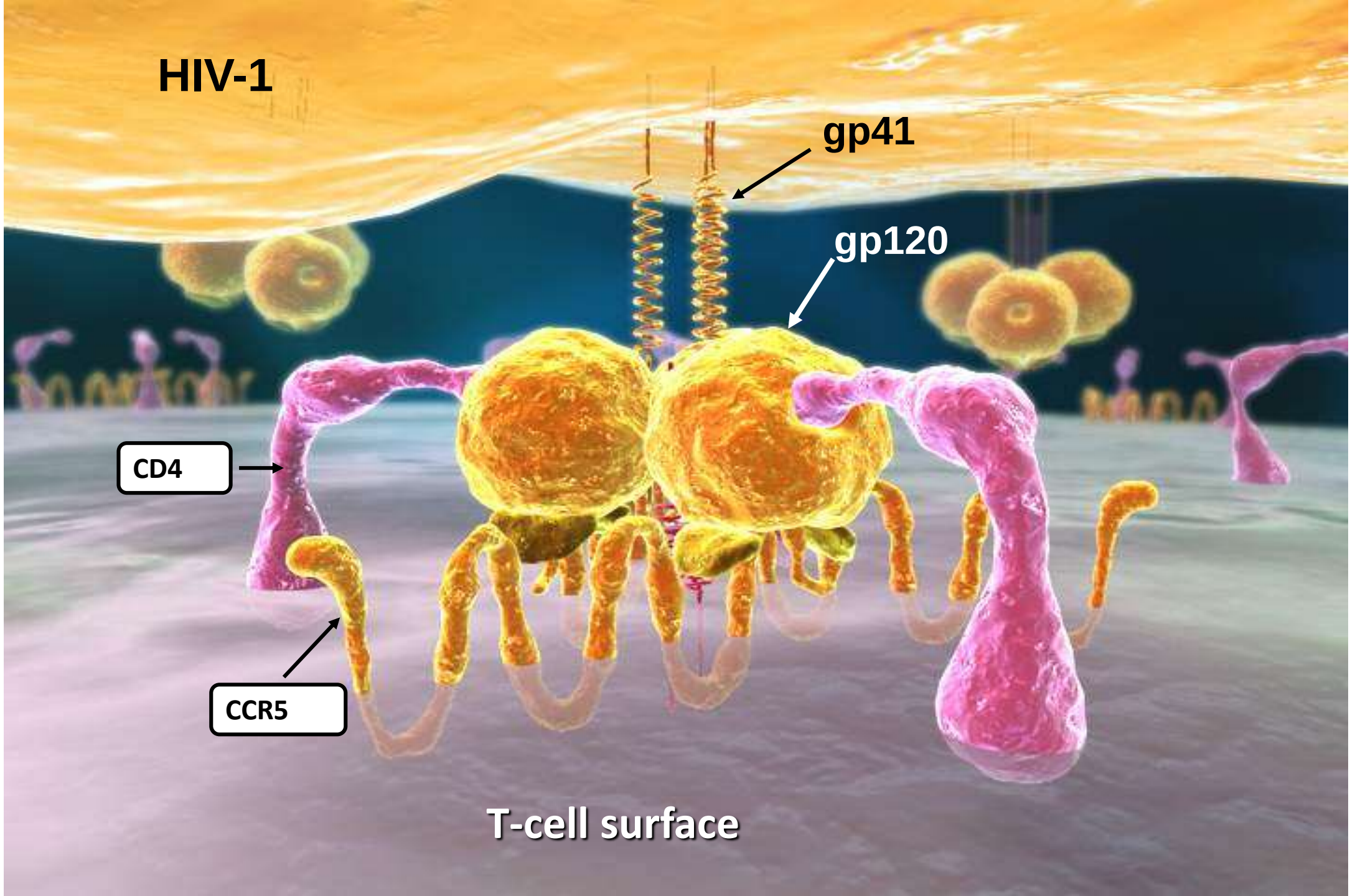
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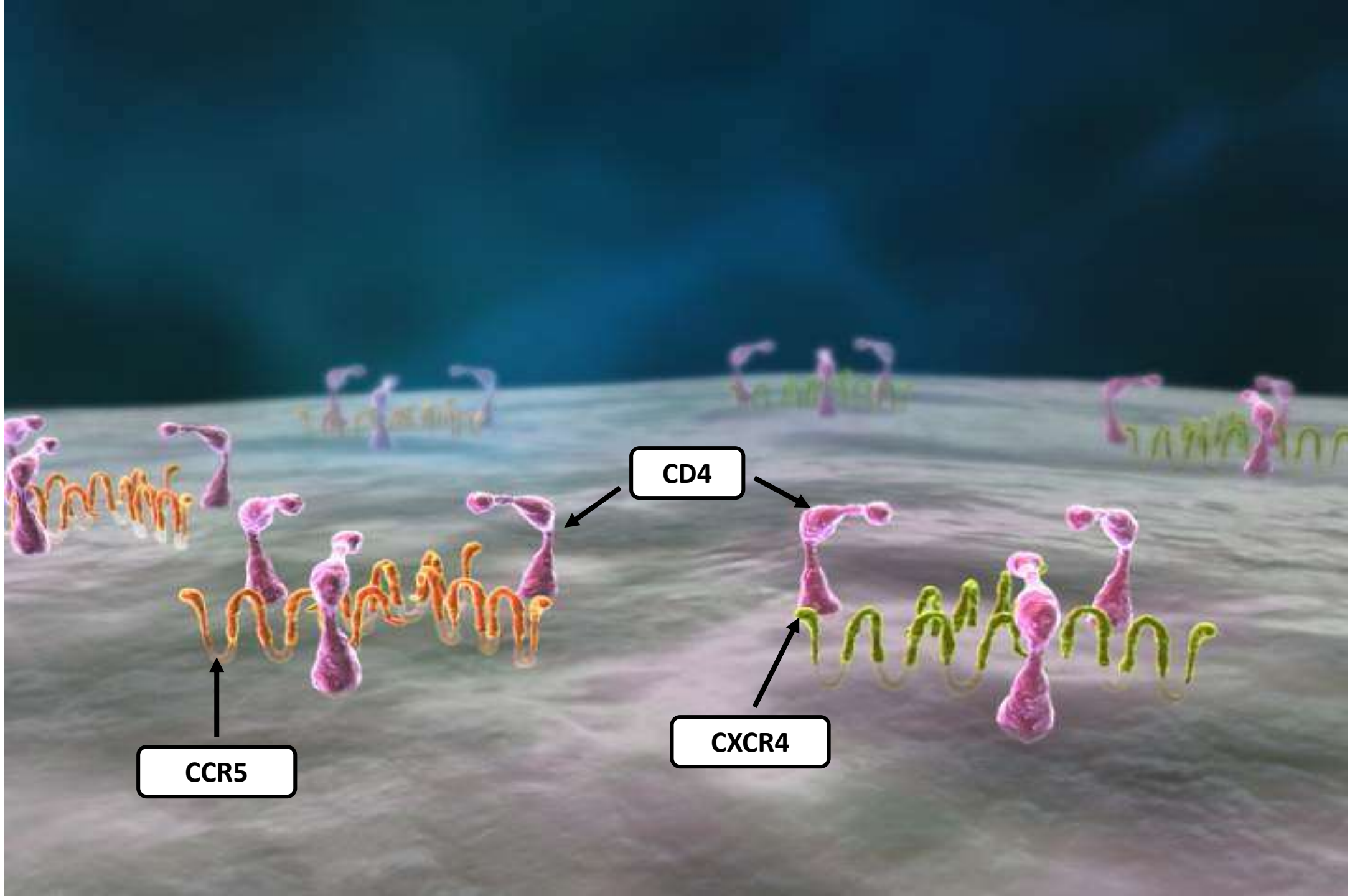
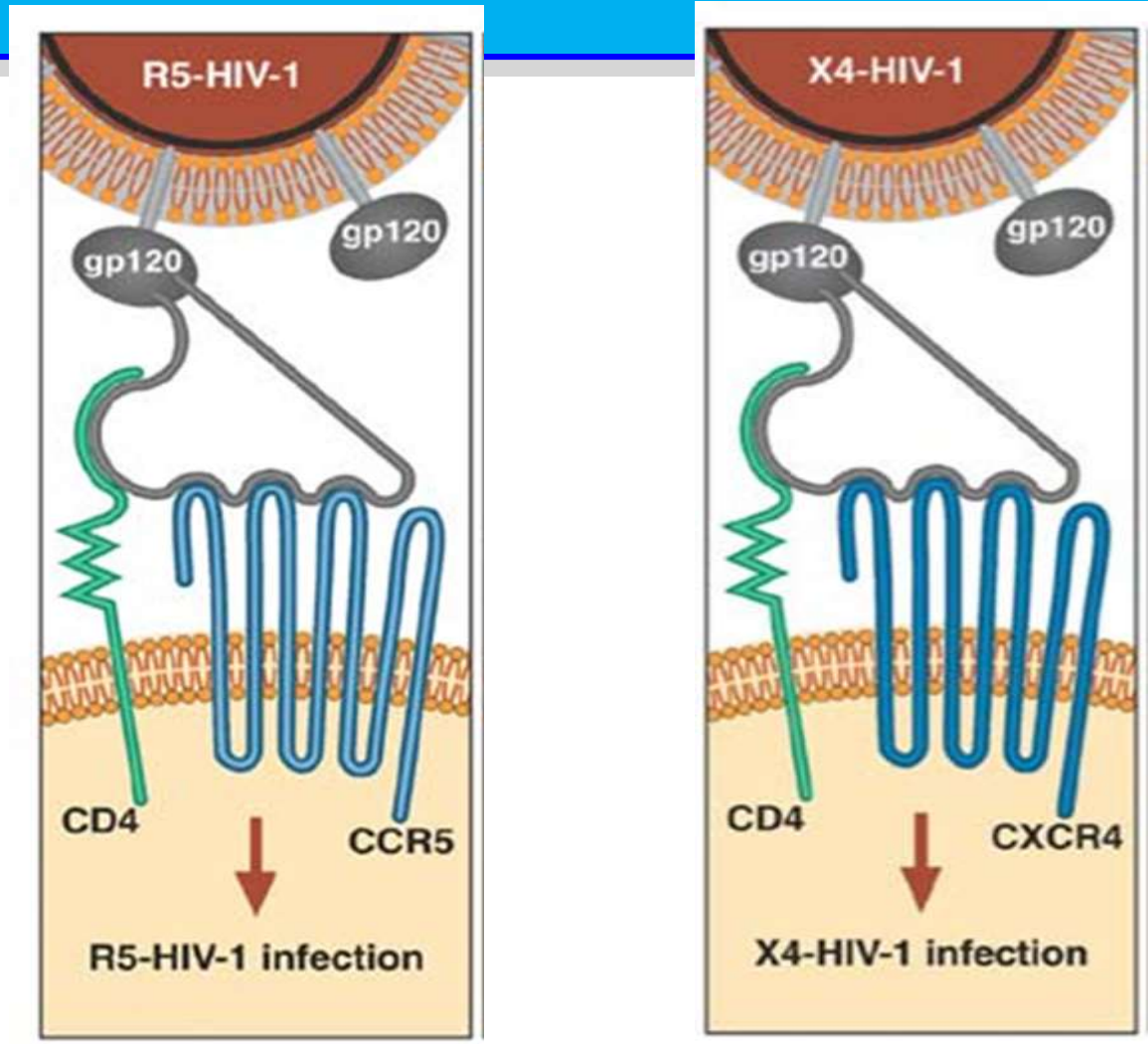

CD4
CCR5
CXCR4

Para invadir la célula, el virus necesita un correceptor



O'Brien SJ and Nelson GW. Nat Gen 2004

Alteración genética: Deleción delta-32