CD4 Cell's Main Coreceptor Is Mapped in High Resolution

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For the first time, researchers have documented the microscopic structure of the main CD4 coreceptor, called the CCR5 receptor, that HIV binds to in order to begin its entry into the immune cell, the Los Angeles Times reports. Publishing their findings in the journal Science, Chinese and American researchers studied the action of the antiretroviral (ARV) Selzentry (maraviroc), which is a CCR5 receptor antagonist that binds to the CD4 coreceptor, blocking HIV.

The research team had already diagrammed CXCR4, which is the other coreceptor HIV uses to enter CD4 cells, albeit less often.

In the study, the investigators let Selzentry bind to an engineered CCR5 coreceptor before purifying and crystallizing the result. Studying the structure at a very high resolution, they found that the drug binds to a separate site on the coreceptor than either HIV or the natural immune proteins called chemokines.

The scientists were able to discover how mutated versions of HIV are able to evade CCR5 inhibitors: When the coreceptor forms an atypical dome shape, it is less likely to bond to the drug, but is still open to linking with HIV.

Details on the structural differences between the CXCR4 and CCR5 coreceptors were also uncovered—findings that might lead to an understanding of why HIV is inclined toward one over the other.

All of these insights have the potential to improve existing ARVs that focus on blocking the virus's connection to CCR5, in addition to spurring research into new therapies.

To read the LA Times story, click here.

To read two different releases on the research, click here and here.

To read the study abstract, click here.

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