

Understanding HIV's genetic code will help treat patients with greater precision

A virus contains its own genes, but it is able to replicate only when it gets inside the cells of a host organism. A new study examines the genetic code of human immunodeficiency virus (HIV) to see how variations might determine the course of a patient's infection. Researchers from Children's Hospital Los Angeles discovered a single difference in HIV's genetic code in two locations will alter the way the virus infects T-cells — and so impact the severity of a patient's symptoms.

For some time now, researchers have known that HIV targets CD4+ T-cells, a type of white blood cell that plays an important role in organizing the body's immune response to pathogens (such as invading viruses and bacteria). To enter these cells and then gradually infect the entire immune system, HIV exploits one of two different receptors on the surface of a person's T-cells: either CCR5 or CXCR4 — usually referred to as R5 and X4, respectively.

While nearly every HIV infection uses the R5 “door” to enter T-cells, the virus, in about 50 percent of all patients, will suddenly switch and begin to use the X4 “door” instead.

Since antiretroviral drugs focus on the R5 receptor, this switch to X4 renders these drugs useless and so usually signals a worsening of a patient's symptoms.

The researchers of the current study, led by Dr. Grace Aldrovandi, chief of the hospital's division of infectious diseases, took a closer look at the envelope that surrounds HIV. Once it comes into contact with host T-cells, this envelope gains and mingles with some material from the patient's host cell.

The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion and analysis. Read full, original post: [The Genetics of Human Immunodeficiency Virus: Understanding How HIV Enters T-Cells](#)