Sign of the Times

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Just as the ancient Greeks had their tricky Trojan Horse, HIV apparently has its own stealth weapon inside enemy territory: a protein called DC-SIGN (dendritic cell–specific C-type lectin). The newly discovered molecule may soon provide prevention sleuths with a whole new anti-HIV avenue to explore. DC-SIGN is found in dendritic cells, the "antigen-presenting" cells that capture foreign organisms and present them to other immune cells for destruction. Found in the tissue lining the rectum, cervix and vagina, these cells have long been thought to be the vehicles that transport HIV from its entry point to the lymph nodes, and so to the CD4 cells, but exactly how this is accomplished was unclear. Now, a team of U.S. and Dutch scientists has found that DC-SIGN may be HIV's accomplice in two important ways.

According to New York University's Dan Littman, MD, PhD, a codiscoverer of the protein, once HIV enters lower-body membranes, DC-SIGN not only allows the dendritic cells to lock onto the virus for its trip to the lymph nodes, but also protects the virus from deteriorating. This process, he theorizes, "facilitates the way HIV goes on to infect T cells and, ultimately, establishes permanent infection."

While more needs to be learned about this protein, including its 3-D structure and normal function, its discovery may have drug company researchers licking their lips. "This is an early stage in the HIV life cycle that has yet to be explored," Littman says. "Whether it be for a post-exposure ['morning after'] treatment or a vaccine, DC-SIGN is likely to be a target worth considering." However, other scientists question whether the protein's role has been proved and fear that attempts to block it might interfere with the body's ability to respond to other viruses or even other types of infectious agents.

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