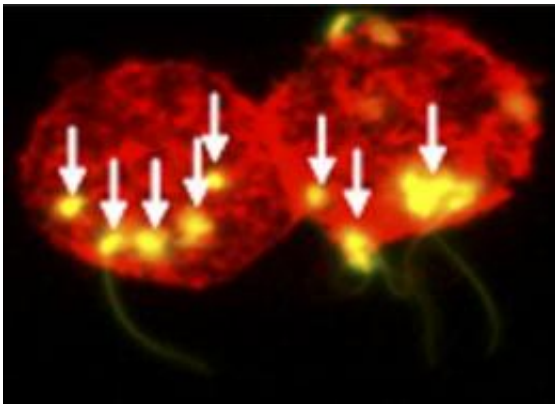


# Sperm may play leading role in spreading HIV

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Spermatozoa (arrows) transmit HIV when they attach to dendritic cells (red).  
Credit: Ceballos, A., et al. 2009. J. Exp. Med. doi:10.1084/jem.20091579 .

Sperm, and not just the fluid it bathes in, can transmit HIV to macrophages, T cells, and dendritic cells (DCs), report a team led by Ana Ceballos at the University of Buenos Aires in Argentina. By infecting DCs, which carry the virus and potentially pass it to T cells, sperm may play a leading role in spreading HIV. The article appears in the November 23, 2009 issue of the *Journal of Experimental Medicine*.

During [sexual intercourse](#), HIV-infected men transmit [HIV](#) through their [semen](#), which carries free-floating virus as well as HIV-infected leukocytes. Traces of HIV have been detected on [sperm](#) as well, but the role they play in viral transmission has been a matter of debate. After all,

men with vasectomies can transmit HIV. Now, Ceballos et al. show that HIV attaches to the surface of sperm and that these HIV carriers pass on the virus to DCs and other HIV targets.

Sperm express molecules known to interact with HIV's envelope, such as heparan sulfate and mannose receptors. The authors show that HIV relies on heparan sulfate to attach to sperm, but not mannose receptors as previously predicted.

Once attached, the virus was transmitted from sperm to DCs in culture. The DC receptors [CD4](#) and DC-SIGN were required for transmission, suggesting that DCs pick up the virus by binding to sperm rather than by ingesting them. DCs matured after interacting with the sperm, producing tolerance-promoting cytokines like interleukin-10. The authors speculate that this immune-suppressing profile, versus an inflammatory profile, might also help the virus spread.

Sperm might reach DCs by passing through microabrasions in the vaginal or anal lining that often form during intercourse, suggest the authors. Or they might contact the finger-like projections of DCs that extend to the surface of mucosal linings. Furthermore, the team found that a slightly acidic pH, similar to the pH in the vagina after sex, promoted HIV-sperm binding and the subsequent rate of sperm-related DC infection.

More information: Ceballos, A., et al. 2009. *J. Exp. Med.*  
[doi:10.1084/jem.20091579](https://doi.org/10.1084/jem.20091579)

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