

Headline **The HIV in your blood is not the same in your semen**
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The HIV in your blood is not the same in your semen

RESearchers have discovered that HIV-1 strains found in blood differ from that in semen suggesting the virus "changes" in the body.

According to Avert, an international AIDS charity, HIV-1 and HIV-2 are "transmitted by sexual contact, through blood, and from mother to child, and they appear to cause clinically indistinguishable AIDS." HIV-1 is most common and easier to spread whereas HIV-2 is mainly found in West Africa.

Ronald Swanstrom, PhD, a professor of biochemistry, biophysics, microbiology and immunology at the University of North Carolina (UNC) School of Medicine, led the study and said in an UNC Aug 16 announcement, "If everything we know about HIV is based on the virus that is in the blood, when in fact the virus in the semen can evolve to be different, it may be that we have an incomplete view of what is going on in the transmission of the virus."

Swanstrom's colleagues and co-authors of the study Jeffrey A. Anderson, MD, PhD, an assistant professor of infectious diseases, and Li-Hua Ping, MD, a research associate at the UNC Centre for AIDS Research, told Relaxnews on Aug 17, "Both blood and genital tract secretions from HIV-1 infected subjects can contain virus, and both have been clearly shown to be involved in transmission."

However, most cases of HIV "transmission occurs through sexual acts, making virus in semen the proximal source in male donors. In heterosexual transmission from males to females, virus in the semen is most likely the infectious agent," continued Ping and Anderson.

"Our data show that viral populations in semen can be genetically

distinct from virus in the blood, different strains could be transmitted from exposure to blood or semen from the same donor."

These findings are published in the Aug 19 online edition of the journal *PLoS Pathogens*.

The researchers found that the "virus is being imported from the blood into the genital tract" and "viral populations can be disrupted by at least two mechanisms while en route from the blood plasma to the semen":

- First, specific subsets of viruses in the male genital tract can be amplified relative to the blood plasma over a short period of time such that the viral populations in semen are more homogeneous than blood.

- Second, viruses in the seminal plasma can be genetically distinct from virus in the blood due to replication in T cells within the seminal tract over a long period of time.

Anderson and Ping explained, "It is unclear how these differences in viral populations impact the biology of the virus or how these changes impact the transmission process," noting "additional studies are required to further our understanding of these complex processes involved in transmission and viral evolution."

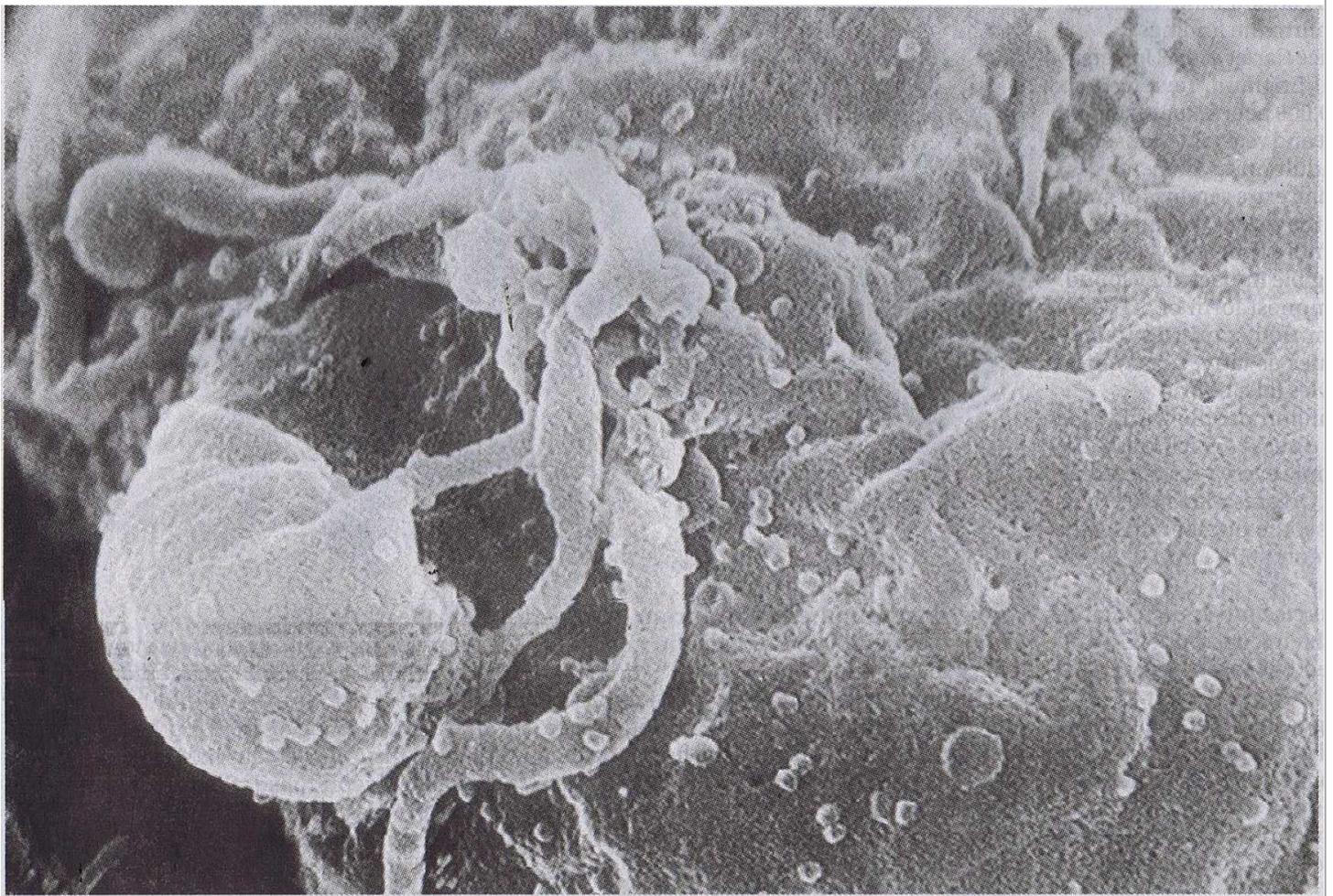
Next the researchers plan to conduct a similar study with women to "elucidate the biological properties of these unique viruses in the genital tract, as well as factors that disrupt viral populations in the genital tract by local amplification and compartmentalization" with the hope to "shed new insights on vaccine and other prevention strategies."

Full study, "*HIV Populations In Semen Arise Through Multiple Mechanisms*": <http://www.plospathogens.org/home.action>

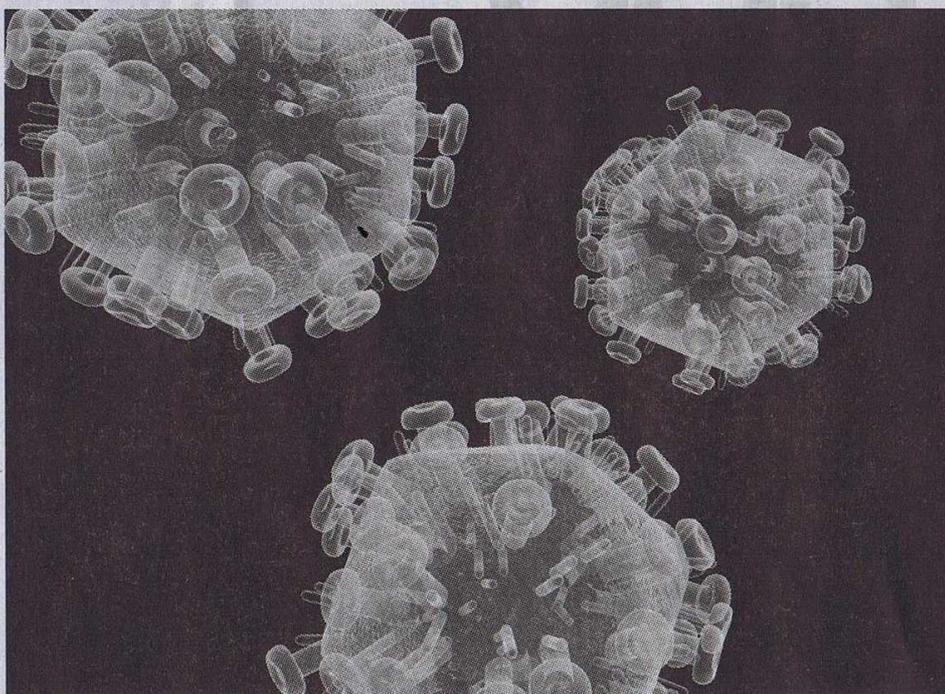
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SCANNING electron micrograph of HIV-1 budding from cultured lymphocyte. PHOTOS: RELAXNEWS



HIV 'changes' in the body creating different strains in blood and semen.