

## **Increased levels of immune activation in the genital tract of healthy young women from sub-Saharan Africa**

### **Abstract:**

To determine whether healthy, young women in sub-Saharan Africa have a more activated immune milieu in the genital tract (i.e. activated CD4 T cells) than a similar population in the United States. A cross-sectional study nested in a phase 1 microbicide trial. Cervical cytobrushes were collected from 18 to 24-year-old women in San Francisco, California, USA (n = 18) and Kisumu, Kenya (n = 36) at enrollment into a phase 1 microbicide trial. All participants tested negative for HIV, herpes simplex virus 2, gonorrhea, chlamydia, and trichomonas, and had abstained from sex for at least 7 days prior to enrollment. Cryopreserved T-cell populations were assayed by flow cytometry in a central laboratory. Secretory leukocyte protease inhibitor levels were assayed in cervicovaginal lavage samples. The Wilcoxon rank-sum test was used to compare immune parameters between sites. The total number of endocervical CD4(+) T cells was slightly higher in participants from San Francisco, but participants from Kisumu had a substantially higher number and proportion of CD4(+) T cells expressing the early activation marker CD69, with and without the HIV coreceptor C-C chemokine receptor type 5, and a greater proportion of activated CD8(+) T cells. Median (interquartile range) genital levels of secretory leukocyte protease inhibitor were lower in participants from Kisumu compared with those from San Francisco [190 (96-519) vs. 474 (206-817) pg/ml,  $P < 0.03$ ]. Activated mucosal T cells were increased in the genital tract of young, sexually transmitted infection/HIV-free Kenyan women, independent of common genital coinfections, and secretory leukocyte protease inhibitor levels were reduced. The cause of these mucosal immune differences is not known, but could partly explain the high HIV incidence in young women from sub-Saharan Africa.