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## Vaginal Lactobacilli for Mucosal Delivery of the Anti-HIV Microbicide, Cyanovirin-N (CV-N)

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### Background

Women are particularly at risk of HIV infection and there is an urgent need for female-controlled approaches to block the heterosexual transmission of HIV.

### Material and Methods

Our work is aimed at the development of a simple, cost-effective, female-controlled preventative against heterosexual transmission of HIV in women, based on our previous proof-of-concept study employing a natural component of the vaginal microflora, as a delivery vehicle for the anti-HIV protein (PNAS, 2003, 100:11672-11677).

### Results

A human vaginal isolate of *Lactobacillus jensenii* was engineered, by stable integration of an optimized expression cassette into the bacterial genome, to secrete high levels of the highly potent HIV inhibitor, CV-N. The *L. jensenii*-expressed CV-N dramatically decreases infectivity of CCR5-tropic HIV<sub>BaL</sub> and CXCR4-tropic HIV<sub>IIIIB</sub> *in vitro*. We further demonstrate that this strain is genetically stable and can transiently colonize animal vaginal mucosa, while retaining important characteristics of the native bacterial phenotype.

### Conclusion

This live microbicide represents a novel approach in the development of an inexpensive and stable protein-based microbicide to curtail the HIV/AIDS pandemic worldwide.