Invention
This invention provides methods for expressing theta-defensins, such as retrocylin-1, in mammalian cells to prevent HIV-1 infection in healthy cells.

Background
Nearly 33 million people are infected with HIV worldwide and despite extensive efforts, there are no effective vaccines against HIV transmission. Identifying drugs that can inhibit HIV infection is essential for preventing spread of the disease. Theta-defensins, such as retrocyclins, are antimicrobial peptides that can inhibit HIV-1 entry into human cells. While these peptides are produced in old world monkeys and orangutans, they are not expressed in humans due to a premature stop codon. UCF researchers have developed a method to induce human cells to produce functional theta-defensins such as retrocyclins. The ability to restore expression of retrocyclins in human cells could provide a new mechanism to prevent HIV-1 infection.

Applications
This invention can be used for the development of oral and topical microbicides such as ointments and creams to protect against HIV-1 infections.

Advantages
• A natural and endogenous mechanism to prevent viruses such as HIV-1 from infecting mammalian cells
• Minimal cytotoxicity in vitro

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Selected References