

Abstract

Worldwide HIV infects women more frequently than men, and it is clear that not all exposed to HIV become infected. Several populations of HIV-exposed uninfected (EU) women have been identified, including discordant couples and sex workers. Understanding what provides natural protection in EU women is critical in vaccine or microbicide development. However, correlates of protection in these women are still unclear. Most studies have used classical methods, examining single genes or cellular factors, a mainstay for traditional immunobiology. This reductionist approach may be limited in the information it can provide. Novel technologies are now available that allow us to take a "systems biology" approach, which allows the study of a complex biological system and identifies factors that may provide protection against HIV infection. Herein we report developments in discovery-based systems biology approaches in EU women and how this broadens our understanding of natural protection against HIV-1.