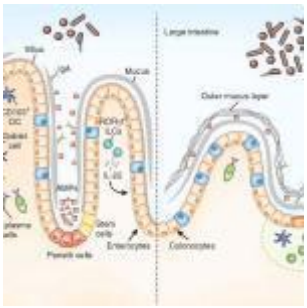
Microbial Gut diversity predicts immune status during HIV-1 infection



It is known that HIV-1 infection alters intestinal barrier, causes gut microbiota dysbiosis, and results in systemic inflammation.

In the most recent edition of AIDS, Nowak et al hypothesize that changes of the gut microbiota predict immune dysfunction and HIV-1 disease progression. Furthermore, antiretroviral therapy (ART) can partially restore the microbiota composition. The authors studied 28 viremic patients, three elite controllers, and nine uninfected controls. Blood and stool samples were collected at baseline and 19 subjects were follow-up during ART. The observed bacterial species were significantly lower in viremic patients compared to controls and bacterial species diversity correlated with $CD4^+$ T-cell counts and inversely with markers of microbial translocation and monocyte activation. The increase in bacterial species resulted in an average $CD4^+$ T-cell count increase of 0.88 cells/µl.

After ART was initiated, microbiota alterations persisted with further reduction in bacterial diversity. The authors state that “microbiota composition at the genus level was profoundly altered in viremic patients, both at baseline and after ART, with *Prevotella* reduced during ART ($P < 0.007$).”

Overall, these data show that gut microbiota alterations are closely associated with immune dysfunction in HIV-1 patients, and these changes persist during short-term ART. Could it be that manipulating gut microbiota in patients on ART is an important adunctive treatment?

Nowak, P. Gut microbiota diversity predicts immune status in HIV-1 infection. Karolinska Institutet.

Nowak, P. et al. 2015. Gut microbiota diversity predicts immune status in HIV-1 infection. *AIDS*.