

## **Correction: Quizinière, HIV**

### **1) Describe this document: its nature and its content, describe each line one by one.**

This document is a line graph.

It depicts the evolution over time of the count of different elements involved in the immune response during an infection by HIV.

First, we can see that the infection is divided in three stages. The first one is called primary HIV infection, the second one, the asymptomatic phase and the last stage is called declared AIDS.

The blue line describes the evolution of HIV level in the blood. During the primary infection we observe a spike which reaches 750 HIV per mm<sup>3</sup> of blood. It happens 6 months after the infection and then it decreases until it reaches a very low level, under 100 HIV per mm<sup>3</sup> of blood. This level remains constant during the asymptomatic phase, and when AIDS is declared, the level of HIV increases considerably.

The green line describes the evolution of CD4 T cells count. During the first 6 months of primary HIV infection the CD4 T cells number first decreases from 800 per mm<sup>3</sup> of blood to 400 per mm<sup>3</sup> of blood. Then it increases until it reaches back its starting count. Next we notice a slow decrease during all the rest of the infection until they disappear totally 1 year and a half after the beginning of declared AIDS stage.

The grey line depicts the evolution of CD8 T cells count. Their number, inferior than 100 hundred at first, grows up until the entry in the asymptomatic phase. Along this stage, their number remains nearly constant until the declared AIDS stage, when the count drops dramatically from more than 800 per mm<sup>3</sup> of blood to less than 100.

The purple and last line represent the count of anti-HIV antibodies. Its evolution looks alike the one of CD8 T cells. First it reaches a number of 700 per mm<sup>3</sup> of blood, remains stable until the declared AIDS stage and drops to less than 100 per mm<sup>3</sup> of blood.

### **2) Use what you learnt in the previous document, the following video to and your knowledge to explain why people infected by HIV end up not being able to fight common diseases.**

People infected by HIV end up not being able to fight common diseases because the virus attacks cells from the immune system. Indeed, the host cell, in which the virus replicates, is the CD4 T lymphocyte. Yet, this process leads the cell to death. Thus, when the virus uses the host cell, it decreases its number in the body of the person infected.

It results in a lack of CD4 T cells in the body. But these cells have a central role in the immune response. For instance, they trigger the differentiation of CD8 T cells and B cells, which are both involved in the destruction of pathogens. Therefore, when CD4 T cells disappear, CD8 T cells and B cells count decreases, the humoral and cell mediated response are not triggered anymore, and the body can't fend off common diseases.

**3) Antiretroviral therapy is very effective and allows people infected by HIV to live with the virus without entering the end stage called: AIDS (which eventually leads to death).**

**Antiretroviral therapy combines the action of different medicines listed below:**

- HIV entry inhibitors**
- reverse transcriptase inhibitors**
- integrase strand transfer inhibitors**
- HIV protease inhibitors**

**Watch the video and complete the diagram below to indicate where these 4 antiretrovirals act.**

