Chapter 5.4

Concluding remarks Section 5

Section 5 has provided indications that LCs supply a novel function in the innate immune system: viral clearance via Langerin. Viruses that have circumvented the first mechanical and physical barriers encounter a second innate barrier: Langerin molecules that sense viruses, which results in viral capture and their degradation. LCs thereby protect themselves against viral infection but also prevent infection of other target cells. Furthermore, activated LCs may migrate to lymphoid tissues to induce a $CD4^+$ T cell response, impeding an escaped viral infection (Figure 5.4).

We demonstrated that this innate clearance applies to the interaction of LCs with both MV and HIV-1, strongly suggesting that this function serves a general antiviral defence mechanism. Viruses that bind to DC-SIGN (**Section 4**), such as cytomegalovirus, dengue virus and hepatitis C virus will most likely bind to Langerin, since the carbohydrate specificity of both lectins overlap. LCs might counteract infection with these viruses, similar to what we have observed for HIV-1 and MV. The existence of MV epidemics and the HIV-1 pandemic suggest that these viruses have evolved mechanisms to circumvent Langerin function or that Langerin function is hampered under certain conditions, such as high viral loads, inflammation and epithelial trauma. This will be further discussed in **Section 6**.

Figure 5.4