ImmunoTools IT-Box-139 Award 2013

Wilfried Posch

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Modification of adaptive immune responses dependent on the opsonisation pattern of HIV-1

During my PhD project I am studying the impact of the HIV-1 opsonisation pattern on the antigen-presenting capacity of dendritic cells (DCs). To investigate the interactions of differentially opsonised HIV-1 with DCs is of prime importance, since upon entering the body, HIV-1 becomes rapidly opsonised with complement fragments and during later stages of infection in addition with HIV-1-specific antibodies. The virus is potently protected against complement-mediated lysis due to acquiring regulators of complement activation during the budding process. Therefore, C3-opsonised HIV-1 particles accumulate from the beginning of infection.

DCs play a major role in the anti-viral responses but they can also get infected and transmit HIV, thereby acting as ´Trojan Horse´. So far understanding of HIV-1 infection and transmission was studied with non-opsonized virus and various subtypes of DC in the skin/mucosa showed different abilities to either eradicate or transmit HIV-1 to T cells. In an earlier study we found that complement opsonisation of HIV-1 acted as an endogenous adjuvant for DC-mediated induction of virus-specific CTLs (*Banki/Posch et al., PLoS Pathogens, 2010)* and our recent study showed that antibody opsonisation of HIV-1 attenuated the CTL-stimulatory capacity of DCs (*Posch et al., Journal of Allergy and Clinical Immunology, 2012*). Thereby the opsonisation pattern has a significant implication on the induction of adaptive immune responses. Right now I am studying the effects of the opsonisation pattern of HIV-1 on $CD4^+$ T cell responses. For this, I am performing multicolour FACS analyses of characteristic surface markers using many of the CD-antibodies from the *IT-Box-139*, eg. CD1a, CD3, CD4, CD8, CD11b, CD14, CD19, CD20, CD21, CD40, CD80, CD86, HLA-DR, HLA-ABC. Furthermore, I will also perform intracellular FACS analyses to detect various cytokines (eg. IL-6 (*IT-Box-139*), IL-10, IL-23p19 etc.). Apoptotic cells will be excluded by Annexin V staining. To detect co-localization of differentially opsonised HIV-1 particles either bound to the surface of the DCs or internalized by DCs or $CD4^+$ T cells, I am also performing laser scanning microscopy using the directly labeled antibodies from the *IT-Box-139* (eg. CD11b, HLA-ABC, HLA-DR, CD40) and a directly labeled antibody against the HIV-1 p24 capsid protein. Therefore, the *IT-Box-139* would greatly support my further work on interactions of DCs with differentially opsonised HIV-1 and their impact on the $CD4^+$ T cell-stimulatory and priming capacity.

ImmunoTools *IT-Box-139.3* for **Wilfried Posch** includes 100 antibodies

FITC - conjugated anti-human CD1a, CD2, CD3, CD4, CD5, CD6, CD7, CD8, CD9, CD11a, CD11b, CD14, CD15, CD16, CD18, CD19, CD21, CD25, CD29, CD36, CD41a, CD43, CD45, CD45RA, CD46, CD52, CD53, CD54, CD58, CD62p, CD63, CD69, CD71, CD80, CD86, CD95, CD235a, HLA-ABC, HLA-DR, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

PE - conjugated anti-human CD2, CD3, CD4, CD8, CD11b, CD14, CD15, CD18, CD19, CD20, CD21, CD22, CD27, CD33, CD34, CD37, CD38, CD40, CD42b, CD45, CD45RB, CD50, CD72, CD95, CD105, CD147, CD177, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

PE/Dy647 -tandem conjugated anti-human CD45

APC -conjugated anti-human CD3, CD4, CD7, CD8, CD10, CD11c, CD14, CD16, CD19, CD27, CD37, CD40, CD44, CD56, CD59, CD61, CD62L, CD62P, CD69, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V DETAILS

plus HLA-ABC PE