



POSTER PRESENTATION

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# Systems analysis of MVA-C induced immune response reveals its significance as a vaccine candidate against HIV/AIDS of clade C

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## Background

Based on the partial efficacy of the HIV/AIDS Thai trial (RV144) with a canarypox vector prime and protein boost, attenuated poxvirus recombinants expressing HIV-1 antigens are increasingly sought as vaccine candidates against HIV/AIDS.

## Methods

Here we describe using systems analysis the biological and immunological characteristics of the attenuated vaccinia virus Ankara strain expressing the HIV-1 antigens Env/Gag-Pol-Nef of HIV-1 of clade C (referred as MVA-C).

## Results

MVA-C infection of human monocyte derived dendritic cells (moDCs) induced the expression of HIV-1 antigens at high levels from 2 to 8 hpi and triggered moDCs maturation as revealed by enhanced expression of HLA-DR, CD86, CD40, HLA-A2 and CD80 molecules. Infection ex vivo of purified mDC and pDC with MVA-C induced the expression of immunoregulatory pathways associated with antiviral responses, antigen presentation, T cell and B cell responses. Similarly, human whole blood or primary macrophages infected with MVA-C express high levels of proinflammatory cytokines and chemokines involved with T cell activation. The vector MVA-C has the ability to cross-present antigens to HIV-specific CD8 T cells in vitro and to increase CD8 T cell proliferation in a dose-dependent manner. The

immunogenic profiling in mice after DNA-C prime/MVA-C boost combination revealed activation of HIV-1-specific CD4 and CD8 T cell memory responses, that are polyfunctional and with effector memory phenotype. Env-specific IgG binding antibodies were also produced in animals receiving DNA-C prime/MVA-C boost.

## Conclusion

Our systems analysis of profiling immune response to MVA-C infection highlights the potential benefit of MVA-C as vaccine candidate against HIV/AIDS for clade C, the prevalent subtype virus in the most affected areas of the world.

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