Retrovirology

Poster presentation

P19-11. Generation of virus-like particles expressing different HIV-1 glycoproteins for induction of broadly neutralizing antibodies

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Background

Elicitation of a potent and broadly neutralizing antibody response is the main goal of an effective HIV-1 vaccine. Considering that all the described and available broadly neutralizing MAbs target the envelope glycoproteins of HIV-1, a vaccine aiming to induce such a response must be based on HIV-1 envelopes. In particular, it has been shown by us and others that the expression of env glycoproteins on the surface of particulate structures, such as virosomes, pseudovirions or virus-like particles (VLPs), could be a more efficient way to deliver conformational epitopes to the immune system. Moreover, it has been lately proposed that a broadly neutralizing antibody response could be induced by focusing the immune response on envelope regions known to be target for broadly neutralizing monoclonal antibodies.

Methods

Aim of this study is to produce in a Baculovirus expression system, within the FP7 EU-funded NGIN project, VLPs based on HIV Pr55gag protein, displaying on their surface either the gp140 HIV-1 envelope glycoproteins or the HIV-1 gp41 sequences covering the ectodomain region. Mutations in the gp140 glycoprotein sequence have been introduced in order to stabilize gp120-gp41 association as well as gp41-gp41 interaction and overcome the structural instability of env trimers.

Results

Molecular constructs containing different transmembrane sequences have been generated for the A-clade gp140 characterized in our laboratory as well as for gp41 regions to evaluate the expression of envelope molecules on the surface of VLPs. Recombinant Baculovirus DNAs have been used for VLP production in High5 insect cells and purified particles have been analyzed for protein expression.

Conclusion

The generation of VLPs expressing on their surface either trimeric gp140 env glycoproteins or gp41 domains will allow the evaluation of humoral response induction *in vivo* and the broadness of its neutralizing activity against a panel of autologous and heterologous field isolates.