Retrovirology



Poster presentation



# P12-03. Generation of novel recombinant HIV-1 glycoproteins for expression on virus like particles

M Tagliamonte*, M Visciano, M Tornesello, FM Buonaguro and L Buonaguro

Address: Lab Mol. Biology and Viral Oncogenesis Unit, National Cancer Institute "Fond. Pascale", Naples, Italy
* Corresponding author

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## Background

A prophylactic vaccine represents the ultimate strategy for blocking the HIV transmission in the general population. To this challenging unprecedented scientific goal, in the last years we have developed a human immunodeficiency virus type 1 (HIV-1) vaccine model based on HIV-1 Pr55gag virus-like particles (HIV-VLPs), produced in a baculovirus expression system and presenting a gp120 molecule from a Ugandan HIV-1 isolate of clade A (HIV-VLPAs). The HIV-VLPAs show the induction in BALB/c mice of systemic and mucosal neutralizing antibodies as well as cytotoxic T lymphocytes, by intraperitoneal as well as intranasal administration.

## Methods

In the present study, the generation of novel chimeric HIV gp120 and gp140 envelope glycoproteins, presenting heterologous signal sequences and/or *trans*-membrane regions, has been planned to improve the density and the trimeric conformation of the molecules presented on the surface of the HIV-VLPs. Moreover, aminoacid substitutions in the gp140 glycoprotein sequence have been designed in order to stabilize gp120-gp41 association as well as gp41-gp41 interaction.

## Results

HIV-1 gp120 or gp140 chimeric genes, based on the Ugandan HIV-1 isolate of clade A, have been generated and transposed into baculovirus-based bacmids for expression in insect cells. Analyses of the VLPs expressing such novel chimeric HIV envelope glycoproteins are currently ongoing.

## Conclusion

The development of novel HIV envelope glycoproteins presented as stable trimeric complex on the surface of VLPs and possibly exposing broadly conserved epitopes should allow the efficient induction of systemic as well as mucosal humoral response with a broad neutralization activity on different HIV field isolates.