Retrovirology

BioMed Central

Oral presentation



# S021-06 OA. Potent and broad neutralizing antibodies from HIV-1 non-clade B infected donor reveal a new HIV-1 vaccine target

SK Phogat*[1], L Walker[2], D Wagner[1], P Chan-Hui[3], M Simek[1], P Phung[4], T Wrin[4], J Mitcham[3], P Investigator[1], S Kaminsky[1], T Zamb[1], M Moyle[3], W Koff[1] and D Burton[2]

Address: [1]AIDS Vaccine Design and Development Lab, IAVI, Brooklyn, NY, USA, [2]Scripps Research Insitute, La Jolla, CA, USA, [3]Theraclone Sciences, Seattle, WA, USA and [4]Monogram Biosciences, San Franscisco, CA, USA

* Corresponding author

*from* AIDS Vaccine 2009
Paris, France. 19–22 October 2009

Published: 22 October 2009

*Retrovirology* 2009, **6**(Suppl 3):O6 doi:10.1186/1742-4690-6-S3-O6

This abstract is available from: http://www.retrovirology.com/content/6/S3/O6



## Background

The ability to elicit broadly cross-reactive neutralizing antibodies is a major challenge in the development of an HIV-1 vaccine capable of neutralizing broad array of viruses in circulation. Nevertheless, a number of HIV-1 infected donors have broadly neutralizing sera and a handful of broadly neutralizing monoclonal antibodies have been isolated from clade B infected donors arguing that a vaccine strategy based upon eliciting broadly protective antibodies is feasible. These antibodies tend to display less breadth and potency against non-clade B viruses and they recognize epitopes on the virus that have so far proven refractory to incorporation into immunogens for elicitation of virus neutralizing responses.

## Methods

Following a large-scale systematic evaluation of neutralizing breadth in the sera of about 1,800 HIV-1 donors, mostly infected with non-clade B viruses, we have begun to generate monoclonal antibodies from these donors. Using a sensitive high-throughput micro-neutralization screening of supernatants from approximately 30,300 memory B cells from a HIV-1 non-clade B infected donor, we idenified two new broad neutralizing monoclonal antibodies.

## Results

We isolated two potent broadly cross-clade neutralizing monoclonal antibodies, PG9 and PG16, that target an epitope not previously described. For both PG9 and PG16, the epitope is preferentially expressed on trimeric envelope, either on transfected/infected cell surfaces or on the HIV-1 virion, although weak binding to soluble monomeric gp120 or trimeric gp140 is observed for PG9. Preliminary epitope mapping studies suggests, PG9 and PG16 bind to conserved regions of variable loops on gp120 in the HIV-1 envelope trimer. Further studies to precisely map the epitope are in progress.

## Conclusion

The ability of the newly identified antibodies to neutralize primary viruses isolates from different clades with unprecedented potency, their preference for native HIV-1 trimers and the accessibility of their epitope, will likely make them valuable tools for HIV-1 vaccine design.