

Straightforward selection of broadly neutralizing single-domain antibodies targeting the conserved CD4 and co-receptor binding sites of HIV-1 gp120

Julie Matz, Pacal Kessler, Jérôme Bouchet, Olivier Combes, Daniel Baty, Loïc Martin, Serge Benichou, Patrick Chames

► **To cite this version:**

Julie Matz, Pacal Kessler, Jérôme Bouchet, Olivier Combes, Daniel Baty, et al.. Straightforward selection of broadly neutralizing single-domain antibodies targeting the conserved CD4 and co-receptor binding sites of HIV-1 gp120. *Retrovirology*, BioMed Central, 2012, 9 (Suppl 2), pp.P214. <inserm-00731772>

HAL Id: inserm-00731772

<http://www.hal.inserm.fr/inserm-00731772>

Submitted on 13 Sep 2012

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



POSTER PRESENTATION

Open Access

Straightforward selection of broadly neutralizing single-domain antibodies targeting the conserved CD4 and co-receptor binding sites of HIV-1 gp120

J Matz*, P Kessler, J Bouchet, O Combes, D Baty, L Martin, S Benichou, P Chames

From AIDS Vaccine 2012
Boston, MA, USA. 9-12 September 2012

Background

The interaction of gp120 with CD4 is the first step of HIV cycle. It is the pivotal event allowing the entry of HIV into CD4+ cells. gp120 is the main target for neutralizing antibodies (nAb) but most of its accessible epitopes are highly variable and thus, HIV can bypass these nAbs.

Single domain antibodies (sdAb) derived from llama antibodies bind their antigen without requiring variable domains pairing. They are able to bind unconventional epitopes, like those present in protein cavities. Their small size (13 kDa) allows them to accede to very narrow space, such as the space between virus and cell membranes during infection. SdAbs are highly stable, easy to clone and produce in large amounts.

Methods

Using trimeric gp140, free or bound to a CD4 mimic, as immunogens in llamas, we selected a panel of broadly neutralizing single-domain antibodies that bind either to the CD4 or to the co-receptor binding sites (CD4BS and CoRBS, respectively).

Results

When analyzed as monomers or as homo- or hetero-multimers, the best sdAb candidates could not only neutralize viruses carrying subtype B envelopes, corresponding to the Env molecule used for immunization and selection, but were also efficient in neutralizing a broad panel of envelopes from subtypes A, C, G and CRF01_AE. Interestingly, sdAb multimers exhibited a broader spectrum of neutralizing activity than the parental sdAb monomers.

Conclusion

The extreme stability and high recombinant production yield combined to their broad neutralization capacity make these sdAbs new potential microbicide candidates for HIV-1 transmission prevention.

Published: 13 September 2012

doi:10.1186/1742-4690-9-S2-P214

Cite this article as: Matz et al.: Straightforward selection of broadly neutralizing single-domain antibodies targeting the conserved CD4 and co-receptor binding sites of HIV-1 gp120. *Retrovirology* 2012 **9**(Suppl 2):P214.

Submit your next manuscript to BioMed Central and take full advantage of:

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit

