

Valerie Bosch

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HIV glycoproteins – vaccine strategy and functional studies



Current Research

We presently focus on two main projects:
The first is concerned with the preclinical evaluation of a vaccine strategy based on conserved conformational epitopes of the HIV envelope glycoprotein (Env). We employ HIV pseudovirion preparations with incorporated HIV-Env or cellular receptor/coreceptor complex, CD4/CXCR-4, respectively. These are manipulated to enrich for Env structures which exclusively arise during the dynamic interaction process of Env with the cellular HIV receptor complex. Potential vaccines are tested in huCD4/huCXCR-4 transgenic rats (collaboration Dr. Oliver Keppler, Hygiene Institute) for the induction of broadly cross-neutralizing antibodies.

The second project is concerned with the role of the HIV Env C-terminus (Env-CT, a region of over 150aa) in infection and replication. Different approaches to gain insight as to the function of this region, involve studying the properties of mutant HI-virions encoding truncated Env-CT, screening for cellular interaction partners of the Env-CT and investigating whether HIV-Env-CT expression induces changes in cellular gene expression.

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Future Projects and Goals

In continuation of our current research we prepare further potential HIV vaccines and analyse immune responses elicited in small animal models.
The ongoing studies on the function of the Env-CT will be followed and extended.

Selected Publications:

Sparacio, S., Pfeiffer, T., Holtkotte D., and Bosch, V. (2002). Inter-retroviral fusion mediated by human immunodeficiency virus or murine leukemia virus glycoproteins: independence of cellular membranes and membrane vesicles. *Virology*, 294, 305-311.
Holtkotte, D., Pfeiffer, T., Pisch, T., and Bosch, V. (2006). Selection and characterization of a replication-competent human immunodeficiency virus type 1 variant encoding C-terminally truncated Env. *AIDS Res. and Hum. Retroviruses*, 22, 57-65.
Devitt, G., Emerson, V., Pisch, T., Keppler, O. T. and Bosch, V. (2007). Analysis of the exposure of induced HIV glycoprotein epitopes in a potential HIV pseudovirion vaccine. *Vaccine*, 25, 2161-2167.
Holtkotte, D., Pfeiffer, T. and Bosch, V. Cell-free infectivity of HIV-1 produced in non-permissive cells is only moderately impacted by C-terminal Env truncation despite abrogation of viral spread. (2007). *AIDS Res. and Human Retroviruses*, 23, 729-740.