The AIDS-CoVAC Consortium is composed of partners from three European countries: Germany, Switzerland, and Italy. The consortium is coordinated by the Research Department of the Kantonal Hospital St. Gallen, Switzerland.

List of participants

Country	*Participant*
Switzerland	Kantonsspital St.Gallen Kantonal Hospital St. Gallen, St. Gallen *www.lfa-sg.ch*
Germany	DPZ German Primate Research Center, Göttingen *www.dpz.eu*
Italy	Università degli Studi di Milano Bicocca University of Milano-Bicocca, Milano *www.unimib.it*

The AIDS-CoVAC Steering Committee is composed of: **Dr. Burkhard Ludewig** (KSSG, coordinator), **Dr. Sieghart Sopper** (DPZ, leader of work package *Vector Evaluation*), and **Dr. Maria Foti** (UNIMIB, leader of work package *Vector Generation*).

AIDS-CoVAC is a two-year specific targeted research project (LSH-2005-2.3.0-4) supported by the European Commission within the European Research Programme on HIV/AIDS, Malaria and Tuberculosis (2002-2006).

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Your National contact point

AIDS-CoVAC

European Research Consortium to support the development of a

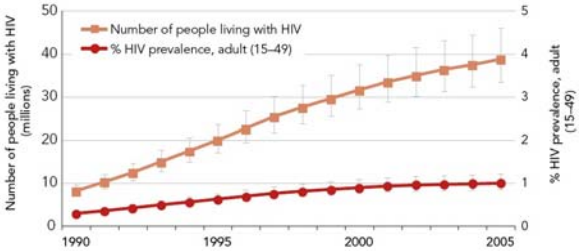
Coronavirus-Based Multigene AIDS Vaccine

www.lfa-sg.ch/AIDSCoVAC

AIDS-CoVAC
is a
SPECIFIC TARGETED RESEARCH PROJECT
funded by the European Commission within the
6th Framework Programme

HIV infection and immunity

The human immunodeficiency virus (HIV) pandemic with approximately 40 million people infected worldwide and more than 4 million deaths per year, represents a major human health problem. The majority of the infections occur in Africa and HIV-induced acquired immunodeficiency syndrome (AIDS) is the leading cause of death among adults aged 15-49 years in this region. Antiviral drug treatment has increased life expectancy and quality in Western countries, but this expensive medication is usually not accessible for infected individuals in developing countries. There is thus an urgent need for an efficient and affordable vaccine.



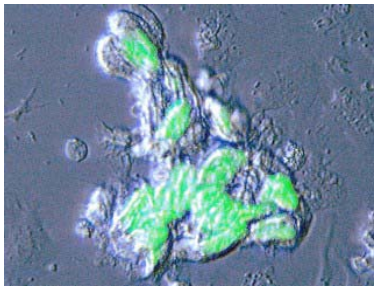
The global HIV epidemic (1990 - 2005), from UNAIDS report on the global AIDS epidemic 2006

The thorough knowledge of the biology of HIV that has been generated over the last two decades has paved the way for a rational vaccine design. An efficient HIV vaccine should induce long-lasting, broad humoral and cellular responses against the immunodominant HIV antigens. In particular, the vaccine should

- target and activate dendritic cells,
- contain multiple immunodominant antigens recognized by T cells,
- display antigenic determinants that induce broadly neutralizing antibody responses, and
- be applicable via mucosal surfaces.

Towards a coronavirus-based multigene HIV-vaccine

Viral vectors represent a superior strategy to deliver HIV antigens and/or immunostimulatory cytokines to specific target cells. However, many virus vector systems are still limited in their ability to induce a broad, long-lasting antiviral immune response capable to prevent HIV infection or to reduce viral load. Moreover, the safety of DNA-based vectors is a matter of concern, because they can integrate into the host cell genome.



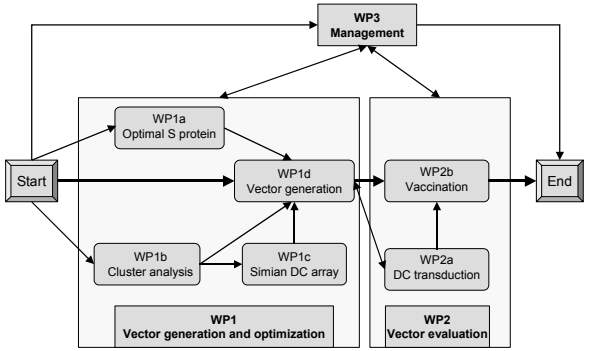
Coronavirus-mediated gene transfer into dendritic cells

The molecular and infection biology of coronaviruses indicate that these viruses can be developed into a universal vaccine platform. First, the receptors for coronaviruses are expressed by dendritic cells indicating that targeting of coronavirus-based vectors to professional antigen presenting cells can be achieved by receptor-mediated transduction. Second, coronaviral structural and accessory genes can be replaced by multiple transcriptional units encoding various antigens and immunostimulatory molecules. The resulting replication-competent, but propagation-deficient vector RNAs can be packaged to virus-like particles (VLPs). Finally, coronavirus infections are associated with mainly respiratory and enteric diseases and natural transmission of coronaviruses occurs via mucosal surfaces.

AIDS-CoVAC work program

The AIDS-CoVAC consortium consists of three partners whose individual profiles of expertise fulfil the requirements for a successful collaboration on the topic:

- A validated system for the generation of recombinant coronaviruses and expertise on the immunobiology of dendritic cells.
- An environment for the pre-clinical testing of the coronavirus-based simian immuno-deficiency virus vaccine in macaques.
- State-of-the-art technologies for the analysis of coronavirus-dendritic cell interaction on the molecular level, using global genomic approaches and a dendritic cell gene expression database.



Overview on AIDS-CoVAC activities

AIDS-CoVAC research is focused on the following strategic objectives:

- Developing a coronavirus-based multigene vaccine that specifically targets dendritic cells.
- Evaluation of the novel approach through pre-clinical testing in a simian model.
- Expanding our understanding of the molecular biology of coronavirus-dendritic cell interaction