HIVACAT: a unique public-private partnership for the development of AIDS prophylactic and therapeutic vaccines

The HIVACAT AIDS vaccine research and development project is a joint Public and Private Partnership (PPP) with a unique architecture at the forefront of international HIV and AIDS research.

HIVACAT is a joint effort of two Catalan Research Institutions in Barcelona (Spain) (Hospital Clinic and Irsicaixa) that are among the international leaders in HIV research. ESTEVE is a key member of the HIVACAT consortium that also has the support of the Obra Social “La Caixa” Foundation (“Fundació la Caixa”) and two organizations of the government of the Generalitat de Catalunya (the Department of Health and the Department of Innovation, Universities and Companies).

HIVACAT represents a major effort in a close collaboration in the field among government entities, a consortium of more than 60 investigators (Irsicaixa and Hospital Clinic which carry out fundamental research in HIV and have access to more than 7,000 patients), a philanthropic foundation, a pharma company, and other organizations.

The program tackles some of the current roadblocks in HIV vaccine design, including the incomplete knowledge of host immune control of HIV, viral sequence diversity and adequate vaccine vector design. Moreover, through extensive national and international collaborations and the stature of its members (with co-direction by Dr. Bonaventura Clotet, Director of IrsiCaixa, and Dr. Josep Maria Gatell of Barcelona’s Hospital Clinic, and with Dr. Christian Brander as the Scientific Director of HIVACAT), the program is well integrated in the global effort for the development of a HIV vaccine.

HIVACAT collaborates with multiple institutions including the Institut Pasteur, MRC, ANRS, NIH, MIT, MGH, La Jolla, Los Alamos National Laboratory, universities in different continents (including Oxford, Genève, Birmingham, Freiburg, Utrecht, UPMC, Bologna, Laussane, McGill, British Columbia, Tokyo, Harvard, Stanford, UCSF, Oklahoma, Cape Town, Univ. of Washington, Univ. of Massachusetts, National Autonomous University of Mexico, New South Wales in Australia) as well as with other organizations and initiatives such as the Gates Foundation, IMPACTA, IAVI, CHAVI, Global HIV Vaccine Enterprise, and EuroRise.

The program design is a holistic approach structured in 8 highly interactive lines of investigation that address topics of cellular and humoral immunity to HIV and their relationship with viral control, assess the impact of viral sequence diversity and host genetics on vaccine immunogen design, neutralizing antibodies, and study the function of dendritic cells as vaccine carriers. It contains a straightforward path to design preventative vaccine approaches and select the most promising candidates for clinical trials. The work is strongly supported by a unique patient and sample source access (created over more than 15 years) and the demonstrated ability of the two HIV reference centers to conduct extensive clinical trials and cohort-based studies.

The HIVACAT program is built on the premise that a HIV vaccine is possible and attainable. Avoiding anti-vector specific immunity, using vectors with suitable adjuvant function and employing rationally-designed immunogen inserts are some of the major points that are being addressed by detailed in-vitro and in-vivo analyses. In addition, establishing highly effective mechanisms for antigen uptake by dendritic cells and inducing their appropriate maturation as well as developing effective systems to induce and monitor mucosal as well as systemic immunity are objectives of various studies.

Overall, HIVACAT combines innovative approaches in HIV vaccine design with the technical expertise of an extensive number of well-established researchers into one program that is based on years of previous outstanding work in HIV immunology, immunopathogenesis, virology and clinical trials. The unique access to HIV patient cohorts and the creation of a critical mass of scientists working under one virtual roof make HIVACAT a strong partner in the global effort to fight the HIV epidemic.
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Furthermore, the Public-Private Partnership structure of the collaboration provides access to funding and the drug development expertise of a pharma company, in fields not always easily available to researchers such as intellectual property, regulatory affairs, GMP production, GLP regulatory studies, and other aspects of preclinical and clinical development, a contribution from ESTEVE that is accelerating the translation of the fundamental discoveries to applied therapeutics and the development of the candidates that are being identified.