

HIV Vaccine Trials Network: activities and achievements of the first decade and beyond

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The HIV Vaccine Trials Network (HVTN) is an international collaboration of scientists and educators facilitating the development of HIV/AIDS preventive vaccines. The HVTN conducts all phases of clinical trials, from evaluating experimental vaccines for safety and immunogenicity, to testing vaccine efficacy. Over the past decade, the HVTN has aimed to improve the process of designing, implementing and analyzing vaccine trials. Several major achievements include streamlining protocol development while maintaining input from diverse stakeholders, establishing a laboratory program with standardized assays and systems allowing for reliable immunogenicity assessments across trials, setting statistical standards for the field and actively engaging with site communities. These achievements have allowed the HVTN to conduct over 50 clinical trials and make numerous scientific contributions to the field.

Keywords: clinical trial network • HIV • HIV Vaccine Trials Network • vaccine

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Network mission

The HIV Vaccine Trials Network (HVTN) is an international collaboration of scientists, educators and community members whose mission it is to enhance discovery and drive development of a safe and globally effective vaccine to prevent HIV. The Network, which is funded and supported through a cooperative agreement with the National Institute of Allergy and Infectious Diseases (NIAID) Division of AIDS (DAIDS), conducts all phases of clinical trials, from evaluating experimental vaccines for safety and the ability to stimulate immune responses, to testing vaccine efficacy. The vaccine products come from various developers, both commercial and nonprofit. The Network's trial sites are located at research institutions around the world and are led by renowned HIV prevention researchers ([Figure 1](#)). Since its creation in 1999, the HVTN has opened 57 trials and enrolled over 13,000 participants, establishing it as one of the largest clinical trials programs dedicated to finding an effective HIV vaccine ([Table 1](#)).

History

The first NIAID-supported preventive HIV vaccine trial was conducted in 1987 by an NIAID intramural research program. Subsequent trials were implemented by one of two separate contract clinical trials networks. The AIDS Vaccine Evaluation Group, comprised of six US sites devoted solely to Phase I/II studies, and the HIVNET Clinical Trials Group, consisting of US and international clinical trial sites and investigators, implemented Phase III clinical trials. NIAID leadership later determined that the scientific agenda for the clinical development of an HIV vaccine would best be supported by a cooperative agreement encompassing all stages of clinical development. Thus, in 1999, NIAID issued a request for applications to establish an integrated network called the HVTN. This cooperative agreement was then granted to the Fred

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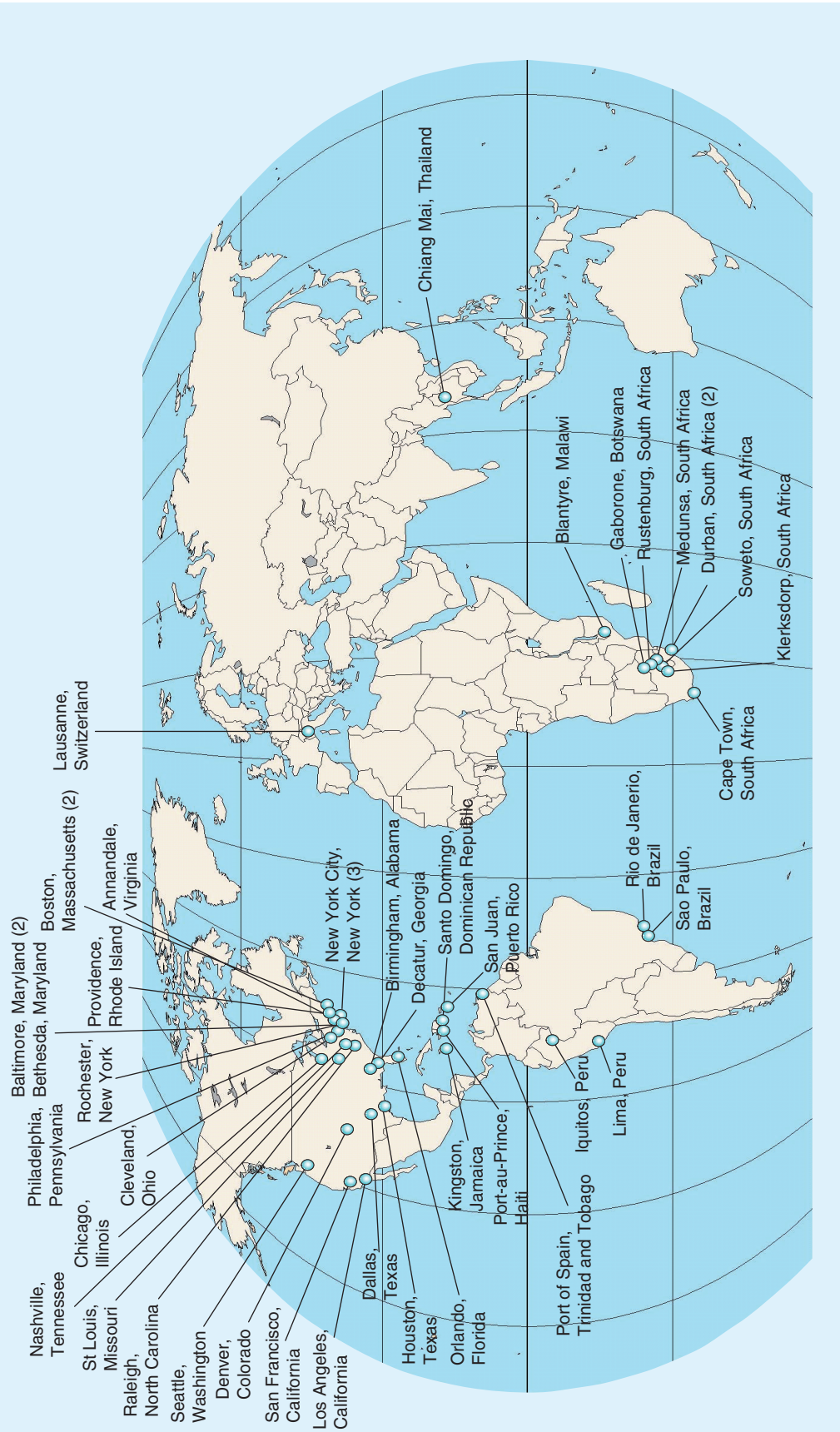


Figure 1. Location of clinical trial sites that have worked with the HIV Vaccine Trials Network. Numbers in parentheses indicate number of sites.

Table 1. HIV Vaccine Trials Network trials by year.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011 ¹	Total
Trials opened	1	2	2	6	7	5	4	5	1	11	3	10	57
Participants enrolled	14	389	282	338	1336	1180	2247	1216	124	3614	1616	1251	13,607
Publications	12	10	5	13	15	16	14	14	18	20	27	28	192
Trials by product													
Protein			1		2								3
DNA				2	2	1		1		1			7
Viral vector		1		2	3	2		3		2	1	4	18
DNA and protein				1		1	1					1	4
DNA and viral vector	1					1	3	1		3	1	2	12
Viral vector and protein		1										1	2
Trials by Phase													
I		2	1	5	6	3	2	2		2		5	28
Ib					1		2	2		2	2	3	12
IIa	1					1				1			3
IIb						1		1		1			3
Other			1	1					1	5	1	2	11

¹Reflects numbers available at time of submission.

Hutchinson Cancer Research Center (FHCRC) with Lawrence Corey as the Principal Investigator. Additional cooperative agreement grants were given to fund the HVTN Laboratory Program and the Statistical Data and Analysis Center at FHCRC. Strategies to overcome deficiencies in HIV vaccine development were identified and incorporated into the HVTN. Several of these concepts formed the basis for the overall structure of the HVTN.

HVTN structure

The organization of the HVTN is designed to streamline HIV vaccine testing and to foster creativity through collaboration among private industry, academia and government. The primary units comprising this structure are described below.

■ Vaccine leadership group/core

The vaccine leadership group/core coordinates and assures quality of efforts for all HVTN activities. Headquartered at the FHCRC in Seattle, WA, USA, the leadership core's responsibilities are to provide oversight and support for the Network. Its functions include evaluation, training and HVTN strategic, operational and business planning, as well as coordination and administration of the HVTN's research activities.

■ Laboratory program

The laboratory program develops, standardizes and performs state of the art immunological assays to support

HVTN protocols, compare immunogenicity of candidate HIV vaccine regimens and conduct analyses of immune correlates of risk for HIV infection in efficacy trials. In addition, the HVTN laboratory program provides leadership to more than 80 laboratories globally, covering immunologic evaluation, virologic monitoring, specimen processing and developmental studies.

■ Clinical research & trial sites

Clinical research and trial sites comprise a global network of medical and research institutions, where testing of experimental HIV vaccines takes place under the supervision of Principal Investigators. To date, the HVTN has worked with 46 sites ([Figure 1](#)).

■ Statistical Center for HIV/AIDS Research & Prevention

The Statistical Center for HIV/AIDS Research and Prevention (SCHARP) provides efficient statistical leadership methods for trial design, operations and design analysis of HVTN protocols. SCHARP also oversees the data lifecycle (collection, management, monitoring and analysis) for HVTN trials.

■ DAIDS

Although not part of the Network, DAIDS, which supports the development of HIV vaccines and other prevention strategies, plays a major role in supporting HVTN activities by funding trials. DAIDS has also served as the regulatory sponsor for the majority of HVTN trials.

Strategic accomplishments of the HVTN

The development of an effective HIV vaccine is one of humanity's greatest scientific challenges. The path to success will likely require numerous iterative steps and is thus more akin to a marathon than a sprint. In acknowledgement of this reality, over the last decade, the HVTN has aimed to improve the process of designing, implementing and analyzing HIV vaccine clinical trials. In conducting numerous clinical trials, the Network has made significant scientific contributions to the field and set precedents in community engagement. These and other major achievements are discussed below (Figure 2).

Streamlined protocol development

Each HVTN trial begins as an idea that, if accepted, progresses from a concept proposal stage all the way to trial implementation under the scientific supervision of an HVTN site Principal Investigator. Before a trial can open, however, it faces the challenge of recruiting a diverse group of stakeholders, including representatives from the vaccine developer, DAIDS, regulatory and community members. One of the HVTN's major achievements has been to develop an efficient protocol development process in which efforts are focused, key input is obtained early and timelines are met. This task is currently facilitated by a Protocol Development Coordinator who manages the activities of the team such that each stakeholder is brought to the table at the appropriate time and thereby minimizes corrections and duplication of work. The drafting process culminates in a 'face-to-face meeting' in which every team member signs off on a final protocol document that is then submitted to DAIDS for review and ultimately regulatory submission.

Another tactic that has improved the protocol development process has been the creation of a protocol template. This template contains standard text and, in its current form, represents over a decade of historical learning. Having much of the document in a standard form allows the focus to be on the specific aspects of a particular trial and therefore saves time and effort. Owing to there being less variation in documents, stakeholders know what to expect and trial sites find it easier to implement trials. In addition, the protocol development process is calibrated such that operations in the laboratory, statistical and site development programs all converge on a projected trial opening date, so that no one stage becomes a rate limiting step. Together, these measures streamline the protocol development process and thus minimize the time between concept generation and trial opening.

Generation of robust immunogenicity data

From the Network's inception, it was recognized that a centralized laboratory program was needed to define

and compare immunogenicity end points in vaccine trials. A major achievement of the HVTN has been to not only establish this program, but to endow it with standardized processes and comprehensive quality assurance measures that ensure data integrity for complex immunogenicity assays, which are increasingly a major trial end point. To achieve this success, a significant effort is invested in assay development and, specifically, standardizing and validating assays. Typically, a large number of assays are performed for each trial, including numerous 'validated' assays for which stringent pass/fail criteria are defined. Current fully validated assays typically performed include those for viral neutralizing antibodies, T-cell intracellular cytokine staining (ICS), IFN- γ ELISpot, and antibody binding via ELISA and bead arrays [1–5]. In addition, a number of 'qualified' assays, for which optimization studies have been completed, are performed and often include cytokine multiplex bead arrays, B-cell ELISpot, viral sequencing and viral inhibition assays. Finally, a large number of exploratory assays are conducted for example; mucosal tissue immunohistochemistry, gene expression from specimens or sorted cells, antibody avidity and various cellular functional assays. The Laboratory Program also focuses on understanding the impact of prior immunity to vaccine vectors on the immune responses induced to the HIV gene inserts and have recently found that both antibodies and cellular responses to the vector can lower the immunogenicity to HIV-1 epitopes [6].

Standardization of assays provides the HVTN a unique opportunity to compare data across protocols, making it a neutral environment for testing products from diverse sources. It also permits the emergence of novel findings by combining data from multiple trials. In addition, because the assays and reagents are openly shared outside the network, they frequently become standards for the field. Examples of this include standard peptide sets for T-cell analyses and a panel of virus isolates used to rank antibody neutralization activity [1,2,7].

Robust immunogenicity data requires not only well functioning assays, but also high quality specimens. Many key assays, such as ICS, rely on viability of cells upon thawing, for example peripheral blood mononuclear cells. Therefore, the HVTN laboratory program has developed a comprehensive training program and system for monitoring specimen handling at the clinical trial sites, with particular emphasis on peripheral blood mononuclear cell processing [8].

To further ensure data integrity, SCHARP programmers and laboratory staff have worked together to create an integrated and robust data management system. The scope of the clinical research program conducted by the HVTN presents a number of specific challenges to

the systems used for acquisition quality control, annotation, integration and analysis of data. The Phase I/II trials program places high priority on rapid access to curated vaccine safety data, in order to ensure that adverse events are identified and interpreted in an efficient and accurate manner. Another high priority for the Phase I/II trials program is the acquisition, annotation and analysis of complex and richly annotated immunological data. Due to the fact that the HVTN research program also encompasses Phase IIb and III efficacy trials, the data systems must meet the standards of validation and documentation required by multiple regulatory agencies that would ultimately guide policy for use of an efficacious vaccine. Finally, because the HVTN research program is global in its character, engaging those communities most impacted by the HIV pandemic, there is diversity amongst HVTN clinical sites in the physical and technical infrastructure and the human resources that can support data systems used for HVTN studies.

To meet these varied challenges in laboratory-based data management, the HVTN has developed a web-portal, with customized data pipelines built from the central data management center into the HVTN laboratories and integrated with assay instrumentation. A major advance in this effort has been that specimen information is made accessible via online tools that allow incoming safety and immunogenicity data to be monitored daily from any computer. This allows

laboratory staff to respond immediately to any deviations in specimen or assay data at specific sites and allows clinical development staff to assess safety data in a continuous manner. Ultimately, this system, which is nearing completion, will also provide public access to published data for completed HVTN trials, as well as access for HVTN investigators to unpublished data, for the purposes of monitoring trial progress and data mining for the generation of novel scientific insights and hypotheses.

Since the majority of products tested by the HVTN to date have not generated adverse safety concerns, immunogenicity data typically serves as the driving force for critical decisions on advancing products through clinical phases [9–11]. Thus, the processes that maximize generation and management of high quality immunogenicity data provide the HVTN with the best possible means with which to address key scientific questions and drive vaccine development. In addition, these measures provide a wealth of valuable resources to the field through assay methodology, reagent sharing and the provision of high quality specimens to collaborators conducting ancillary studies.

Assembled statistical leaders in the field

SCHARP has assembled a group of leading statisticians who contribute to many aspects of HVTN vaccine testing. The integration of this valuable resource into numerous HVTN activities is a huge contributor

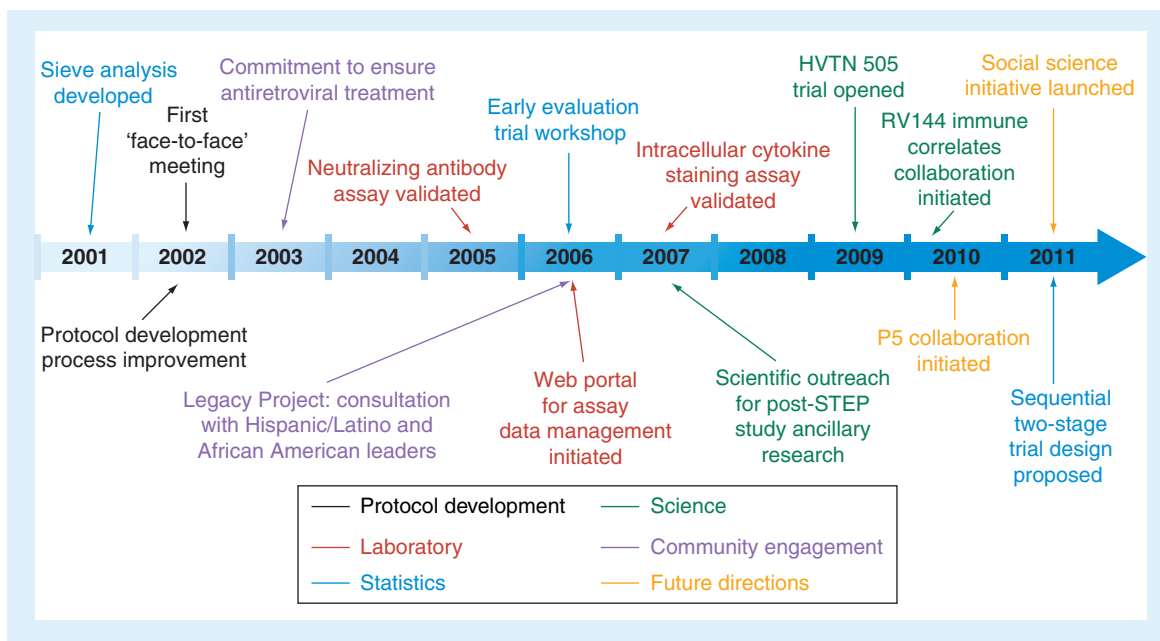


Figure 2. Timeline of some of the strategic accomplishments achieved by the HIV Vaccine Trials Network in the design, conduct and evaluation of clinical vaccine trials globally. Color coding depicts accomplishments in the areas of protocol development, laboratory, statistics, science, community engagement and future directions.

to HVTN's success. Statisticians are present on protocol development teams from the initial concept stage, providing key input on trial size and design and, as previously mentioned, playing a major role in assay validation and data management and analysis. Beyond these contributions, HVTN statisticians are well known in the field for their achievements in developing novel trial designs and devising statistical methods to assess vaccine efficacy and immunogenicity, immune correlates of vaccine-induced protection and vaccine effects on viral genetic diversity.

Since the creation of the HVTN, SCHARP statisticians have developed methods to improve clinical trial design, many of which have become standards for HVTN trials. For example, Moodie *et al.* developed a statistical model for progressing from a standard Phase Ia study for safety and immunogenicity assessment to Phase Ib for regimen optimization and then to Phase IIa studies for further safety and immunogenicity characterization [12]. This trial design also proposed an early stage evaluation in which vaccine trials failing to meet predetermined criteria for immunogenicity are abandoned, thus conserving resources and allowing the most promising candidates to proceed. Shortly thereafter, at a time when no HIV vaccine trials had yet demonstrated an effect on HIV infection, numerous HIV vaccine experts, including SCHARP statisticians, gathered to review alternative trial end points, such as postinfection viral load and regulatory issues in HIV vaccine clinical trials [13]. A subsequent workshop, involving SCHARP statisticians and others, was convened to consider 'alternative study designs for early efficacy evaluation of HIV prophylactic vaccines.' The purpose of this NIAID and Office of AIDS Research-funded meeting was to discuss how to use statistical power to obtain earlier efficacy evaluations through Phase IIb trials [14,15]. Since then, the Phase IIb model has been adopted by many in the HIV vaccine field over the traditional use of Phase III trials as a means to obtain efficacy readouts in smaller, less expensive trials. In 2009, the RV144 HIV vaccine efficacy trial conducted in Thailand (US Military HIV Research Program and Thai government) was the first to report that a vaccine had reduced the risk of HIV infection [16]. Emboldened by this signal of efficacy, the concept of a Phase IIb design has recently been developed further into a so-called sequential two-stage trial design, in which multiple regimens are evaluated in parallel using a shared placebo group. The idea is that after an interim evaluation, only regimens demonstrating positive efficacy will be continued [17,18]. A major aim of this highly adaptive approach is to evaluate more regimens simultaneously, while also prioritizing those providing efficacious and durable responses.

The SCHARP statisticians are also well known for their success in developing novel approaches for the assessment of immunological end points and in determining how immune responses relate to vaccine efficacy. Gilbert *et al.* developed 'sieve analysis' methods to assess whether and how vaccine efficacy selectively blocks HIV acquisition with certain HIV genotypes and/or drives the evolution of infectious HIV genotypes [19,20]. In a collaborative effort that included SCHARP statisticians, these sieve analysis methods were carried out for an HIV vaccine and provided the first evidence that a T-cell-based vaccine can have an effect on HIV-1. These results encouraged continued pursuit of T-cell-based strategies prior to there being any evidence of efficacy [21].

The ultimate goal of vaccine research is to identify immune responses that reliably predict vaccine efficacy and thereby accelerate vaccine development. In an often referenced article, SCHARP statisticians explain the statistical terms describing these immune responses and propose methods to determine immune 'correlates of risk' (responses that correlate with infection risk) versus 'surrogates of protection' (responses that predict vaccine efficacy) [22]. Although the RV144 HIV vaccine offered only a modest benefit, with a vaccine efficacy of 31.2%, this partial success provided, for the first time, an opportunity to examine potential immune responses correlating with infection risk [23]. During the last 2 years, an enormous collaborative effort including SCHARP statisticians has successfully identified two such correlates of risk [HAYNES BF, GILBERT PB, MCEL RATH JM *ET AL.* IMMUNE CORRELATES ANALYSIS OF THE ALVAC-AIDSVAX HIV-1 VACCINE EFFICACY TRIAL (2012), SUBMITTED]. These findings have the potential to significantly affect current and future HIV vaccine trials.

Significant scientific contributions

The HVTN successful completion of so many HIV vaccine clinical trials has provided a wealth of information on both safety and immunogenicity of a large number of diverse products and vaccine regimens, from single protein and DNA products to prime boost combinations (Tables 1 & 2). In collaboration with Merck, the HVTN participated in the STEP study, which was the first to examine efficacy of a vaccine designed to elicit strong T-cell responses and was also the first to use a Phase IIb design [24]. Although this vaccine was not effective, sieve analyses indicated that this approach did put immune pressure on the virus. In addition, trials have been conducted on a variety of nonreplicating, recombinant viral vectors, including those based on pox viruses, adenovirus and, currently in active enrollment, a first-in-human trial assessing the safety of a vesicular stomatitis viral vector.

Table 2. Immune responses generated by different vaccine platforms.

Vaccine type	CD4 ⁺ T cells	CD8 ⁺ T cells	Binding antibody	Neutralizing antibody
Naked DNA	++	+/-	++	+/-
Cytokine adjuvanted DNA [†]	+/-	+/-	-	-
Electroporated DNA [†]	++	++	++	+
Pox vectors	++	+	++	+
Adenovirus vectors	+	+++	++	+
gp120 protein	-	-	++	+

+/- denote relative strengths of the immune response, with more + indicating a stronger response.
[†]Denotes additional effects on top of naked DNA.

A major advance in the field has been the coadministration of DNA vaccines and cytokines through electroporation, resulting in dramatic enhancements of the CD4⁺ and CD8⁺ T-cell immune responses (Table 2) [ANDERSEN-NISSEN E, ZAK DE, DUERR AC *ET AL.* INNATE IMMUNE RESPONSE SIGNATURES TO AD5 AND MVA-VECTORED CANDIDATE HIV VACCINES PREDICT INDUCTION OF ADAPTIVE RESPONSES. PRESENTED AT THE: AIDS VACCINE 2011 CONFERENCE. BANGKOK, THAILAND, SEPTEMBER 2011, MANUSCRIPT IN PREPARATION]. Another recent focus has been on a series of small Phase Ib studies that aim to address basic science questions and generate new hypotheses regarding vaccination strategies and their associated immune responses. One such study examines the influence of antigenic competition on the breadth and magnitude of vaccine-induced T-cell responses. In another, mucosal immune responses are being evaluated in response to a prime boost vaccine regimen. These early phase clinical trials provide a wealth of information for vaccine platforms, which may be applied to other infectious diseases and immunotherapeutic strategies.

Vaccine candidates that progress into efficacy trials have the greatest potential to advance the field and generate immune correlates of protection. The largest ongoing HIV vaccine clinical trial, known as HVTN 505, is a Phase IIb trial testing a vaccine regimen developed by the Vaccine Research Center at NIAID. The regimen, a DNA prime followed by a recombinant adenovirus type 5 (Ad5) boost, was found to be the most immunogenic in any HVTN study to date. The results of this trial, together with the large amount of immunogenicity data being collected, are expected to provide valuable information for future vaccine development.

In addition to trial findings, significant scientific advances are made by collaborative research utilizing trial specimens. The HVTN has made a concerted effort to reach out to the entire HIV vaccine research community for ancillary studies. These studies provide a novel means for research to be conducted in conjunction with vaccine trials, which differs from industry-run trials. Examples include the HVTN laboratory oversight

of over 25 studies by investigators around the world on samples from the STEP study that tested the Merck Ad5 vaccine [25,26]. Several other studies have compared responses across multiple trials, including a recent study comparing innate immune responses among vaccine candidates [ANDERSEN-NISSEN E, ZAK D, PETERSON E. MERCK AD5/HIV VACCINE INDUCES EXTENSIVE BUT TRANSIENT INNATE IMMUNE ACTIVATION IN HUMANS THAT PREDICTS PEAK CD8⁺ T-CELL RESPONSES AND IS ATTENUATED BY PRE-EXISTING AD5 IMMUNITY (2011), SUBMITTED].

Collaborative research conducted by the HVTN Laboratory Program also serves as a valuable resource to the HIV Vaccine Enterprise in developing and evaluating vaccine concepts and efficacy signals. The laboratory investigators were key in the organization and implementation of a host of cellular and antibody evaluations in the previously mentioned RV144 trial immune correlates analyses. The program's standardized approaches and years of experience serve the vaccine community well in its ability to rapidly assemble collaborative teams to carry out state-of-the-art immunological and virological analyses to understand findings in efficacy studies conducted worldwide.

To ensure the continuation of scientific advances in HIV vaccine research, the HVTN established three training and mentorship programs aimed to recruit and retain the next generation of HIV prevention researchers. The programs include an early-stage investigator award, bridging nonhuman primate and clinical research, and two mentorship programs targeting minority researchers who are under-represented in the field of HIV prevention research.

Set precedents in community engagement

Community advisory boards (CABs) give a voice to the communities in which clinical trials are conducted. The community engagement that these groups promote is not only critical from an ethical point of view, but is also essential for successful trial conduct. A means of ongoing community consultation is required for all NIAID-funded research networks and therefore CABs have been utilized by the HVTN since its inception.

The HVTN interacts extensively with CABs and this has played a significant role in the Network's success. CAB representatives are included in nearly all steps of the protocol development process and participate on the majority of HVTN committees and teams, including the Network's decision-making body – the Scientific Steering Committee. In addition, the HVTN actively promotes community education programs at each of its trial sites, in order to enhance the enrollment and retention of trial participants. The strong community relationships developed through these activities, coupled with the efforts by the trial sites themselves, have enabled the HVTN to set precedents for the ethical conduct of clinical trials.

An example of how the HVTN's partnership with community education programs is advantageous, concerns the responsible and timely dissemination of the STEP study results, in which a specific group of vaccine recipients exhibited a transient increased risk for HIV infection. Community education programs were essential in explaining the results and maintaining public trust in vaccine trials [24]. More recently, efforts to educate communities on complex topics pertinent to HIV vaccine trials, such as viral load and the rationale behind pre-exposure prophylaxis, have enhanced trial participation and adherence.

One example of the HVTN's strong commitment to the community is the provision of treatment to trial participants who become infected with HIV [27]. Following through on this commitment required strong community partnerships, especially in developing countries where treatment may not be easily accessible.

The Participant's Bill of Rights and Responsibilities is another example of the HVTN setting a precedent for community engagement. This document, which was developed in collaboration with the Global CAB's Ethics Working Group in 2003 and revised in 2007, provides a list of the rights and responsibilities of HVTN trial participants. It was developed based on the realization that HIV vaccine trial participants required additional protection above and beyond existing, internationally recognized codes of ethics.

In the USA, African American and Hispanic populations are among those at highest risk of HIV infection and therefore it is critical to ensure their inclusion in HIV vaccine trials. However, these populations are also historically under-represented in clinical trials, in part because of mistrust in government-sponsored research. To combat this, the HVTN pioneered the Legacy Project, to engage and build trust between researchers and minority populations. The project's mission and success were deemed important enough that the Legacy Project has been expanded to include all DAIDS-supported HIV research networks.

An important issue affecting HIV vaccine trial participants is the possibility of testing positive in standard HIV antibody tests as a result of antibodies generated by the vaccine (rather than due to infection with HIV). This phenomenon, known as vaccine-induced seropositivity (VISP) could result in discrimination against such individuals. To protect participants, the HVTN formed a task force that performed a cross-protocol study of VISP-related issues and developed educational materials for participants and healthcare providers [28]. These materials, as well as contact information for assistance, are provided to trial participants and each site has access to accurate tests that can distinguish HIV infection from VISP.

Future perspective

Improving on the efficacy and durability of the RV144 vaccine regimen is a primary focus of current HVTN activities. Recognizing both the immense need and challenge of developing an efficacious HIV vaccine, a novel collaboration has been created between pharmaceutical companies and nonprofit organizations, known as the Pox Protein Public Private Partnership. This unprecedented collaboration, known as the P5, is a partnership between NIAID, the Bill & Melinda Gates Foundation, HVTN, the US Military HIV Research Program, Sanofi Pasteur and Novartis Vaccines. Its primary aim is to extend and confirm the RV144 findings in other geographical locations, such as South Africa, and to prepare a path to eventual vaccine licensure.

Completion and follow-up analysis of the numerous ongoing HVTN clinical trials, and the HVTN 505 Phase IIb trial in particular, are expected to provide valuable insight into future vaccine development strategies. These and future trials also provide a valuable opportunity to perform research on behavioral aspects of clinical trial participation. The recently launched HVTN Social Science Initiative aims to identify facilitators and barriers to trial participation, in order to improve recruitment and retention of participants in HIV prevention clinical trials.

After more than a decade of existence, the HVTN has become known as an efficient, high-quality network with processes and infrastructure that optimize HIV vaccine development. While still maintaining its intense focus on HIV vaccine development, the HVTN is currently exploring ways to leverage its strengths in collaborations with other HIV research networks, as well as for other disease areas. By simultaneously incorporating leading scientific, clinical, laboratory and statistical expertise, and actively engaging local site communities, the HVTN generates a forceful synergy, propelling the field ever closer to succeeding in developing an effective HIV vaccine.

Executive summary

- The HIV Vaccine Trials Network (HVTN) is an international collaboration of scientists, educators and community members.
- HVTN mission: to enhance the discovery and drive the development of a safe and globally effective vaccine to prevent HIV.
- It is funded and supported through a cooperative agreement with the National Institute of Allergy and Infectious Diseases and the Division of AIDS.
- It conducts all phases of clinical trials and since its creation in 1999, has opened over 50 trials and enrolled over 13,000 participants.
- More information may be found at www.hvtn.org.
- The HVTN major strategic accomplishments have been to:
 - Streamline the protocol development process and thereby minimize the time between vaccine concept inception and trial implementation;
 - Establish a centralized laboratory program that reliably generates robust immunogenicity data;
 - Assemble and integrate statistical leadership into all aspects of vaccine testing;
 - Make significant scientific contributions through principal investigator led and collaborative research;
 - Set precedents in engagement with trial site communities.

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