AIDS VACCINE SCIENCE FOR BUSY ADVOCATES

Vaccine R&D Pipeline

EFFICACY TRIALS
What we've learned

Clinical trials that evaluate vaccines in humans provide valuable information that advances the field—whatever the result.

2003/2004

VaxGen ✖ Protein-based candidate in two trials, one primarily in the US, also in Canada, the Netherlands and Puerto Rico, and one in Thailand; results showed **no efficacy**

2007

Step ✖ Ad5-based vaccine in two trials: Step in Australia, Brazil, Canada, Dominican Republic, Haiti, Jamaica, Peru, Puerto Rico and the US, and Phambili in South

Phambili ✖ Africa; both halted early due to futility of the Step trial to show efficacy, i.e. vaccine had **no efficacy**

2009

RV144 ✚ Pox vector + protein boost vaccine in Thailand; results showed **31.2% efficacy** after 3 years

2013

HVTN 505 ✖ DNA prime +Ad5-based boost vaccine in the US; halted early due to futility to show efficacy, i.e. vaccine had **no efficacy**

PRODUCT PIPELINE
Where we are today

A range of vaccine candidate strategies are in various Phase I and II trials throughout the world. The field must think critically about the future of candidates and how to build on past lessons.

Phase I	Phase II	Phase IIb/III
Poxvirus (MVA, NYVAC)		Poxvirus (ALVAC) *(planned trial)*
Protein		Protein
DNA		
Adenovirus (rAD26, rAD35, ChimpAdV63)		
Sendai virus	Lipopeptide	
Vesicular Stomatitis virus	Replicating viral vector *(Replicating Ad, replicating NYVAC, Tian Tian)*	

Each color represents a different vaccine strategy or concept; the colors are reflected throughout this fact sheet.

FINDING A VACCINE THAT WORKS
Future directions

RV144 is the one trial so far to show efficacy; clinical trials are now being designed to build on this result. At the same time, basic research holds promise for identifying new vaccine candidates for future clinical testing.

Please see our corresponding fact sheets, AIDS Vaccine Science for Busy Advocates: Building on RV144 and Antibody Research.

How will the lessons we've learned, the candidates currently in trials, plus upstream research to develop new candidates lead us toward a licensed vaccine?

Building on RV144: The Pox Protein Public Private Partnership (P5) aims to build on RV144 findings in Thailand, and to explore the candidate in South Africa. Follow-on studies are starting and ongoing in Thailand; additional large-scale trials in both countries are expected to start in 2-3 years. This suite of studies could prepare the first path to licensure of an HIV vaccine.

Exploring bNAbs to build a vaccine: One way vaccines work is by prompting the immune system to develop antibodies. One promising area is in the identification of broadly neutralizing antibodies (bNAbs) – potent antibodies that block the activity of many different types of HIV. Research is moving forward to better understand how to generate these antibodies with a vaccine, which will lead to development of new candidates for future clinical testing.

Passive immunization: A strategy that tries to get one step ahead of the virus by administering effective antibodies. Data from pre-clinical trials suggest that passive immunization protects against infection. However, protection wears off as antibodies decay; therefore passive immunization would have to happen periodically to maintain a protective effect.

The challenge for vaccine advocates is to sustain funding and communicate progress—and the long road that lies ahead. HIV prevention is expanding to include many effective options such as medical male circumcision, PrEP and treatment as prevention. But an effective preventive vaccine remains a critical tool for eventually bringing the epidemic to an end.

VACCINE CONCEPTS KEY

- Poxvirus
- Protein
- Antibody
- DNA
- Adenovirus
- Sendai virus
- Vesicular Stomatitis virus
- Lipopeptide
- Replicating viral vector

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