IAVI: International AIDS Vaccine Initiative

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More than 25 years ago, the first cases of AIDS were reported in medical literature. In 1983 the human immunodeficiency virus (HIV) was discovered as the cause of the disease. At this time, the scientific field was optimistic about the development of a safe and effective vaccine against the virus to help put a stop to AIDS. However, HIV has proven to be the most complex virus we have ever encountered. Since its discovery, HIV has caused around 25 million deaths. Globally 33 million people are currently living with HIV and the virus infects nearly 7 500 people each day.

Despite significant investments, HIV continues to outpace global response, and development of an effective vaccine remains one of the greatest scientific and public health imperatives facing the world today.

In the following editions, *Global Medicine* in collaboration with the International AIDS Vaccine Initiative (IAVI) will pay special attention to the development of an HIV/AIDS vaccine. In this first episode IAVI presents their work.





Developing a vaccine is never easy: it took 47 years from the discovery of the poliovirus to the development of a polio vaccine. HIV was discovered in 1983, but we have only had a serious AIDS

vaccine effort for about a decade. Developing a vaccine to prevent HIV/AIDS is particularly challenging. HIV targets and destroys the very immune system that a vaccine traditionally triggers, and the genetic instability of HIV is daunting. Yet, there is compelling scientific evidence that an AIDS vaccine is possible, as some people who are infected with HIV are able to control the virus for many years. Rarely, individuals resist infection despite exposure to the virus. Researchers are studying the immune responses in these people to find clues for the development of a vaccine.

But the challenges are not only scientific. The pharmaceutical sector, where most vaccine development expertise resides, has been reluctant to invest in the development of an AIDS vaccine.

An innovative model to develop a vaccine

In 1996, with the AIDS pandemic spinning out of control and little investment by the private sector to develop a vaccine against HIV, the International AIDS Vaccine Initiative (IAVI) was founded. Their goal is to ensure the development of safe, effective, preventive AIDS vaccines for use throughout the world, and make them accessible to all who need them.

IAVI was the first global, non-profit public-private partnership for product development (PDPs). Such an organization uses resources and works with the unprofitable public and private sector. Important is the commitment of the public sector to support important, if unprofitable, causes with the expertise and resources of the private sector to combat neglected diseases.

In the case of an AIDS vaccine, the public sector (especially governments) is committed to fight the pandemic, but does not have the expertise to develop vaccines. In contrast, the private sector (biotechnology and pharmaceutical companies) does have this expertise, but lacks financial incentives, and therefore does not invest in such Research & Development (R&D). It is this gap that IAVI is filling: focusing expertise and resources from the pharmaceutical and biotechnology sector

on the development of an AIDS vaccine using finances provided by the public sector.

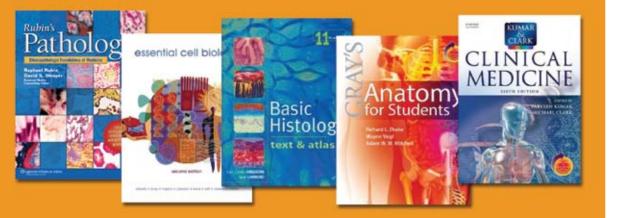
Today, there are more than 20 international PDPs responsible for three quarters of all drug development projects for poverty related diseases, including vaccines against tuberculosis and malaria.

IAVI's work

IAVI's scientific team, drawn largely from the vaccine industry, researches and develops AIDS vaccine candidates and conducts HIV clinical trials and clinical research through partnerships. The organization also advocates for R&D effort, political attention, sufficient financial resources, and for a supportive environment in countries engaged in this effort. Finally, the organization educates and trains a broad range of stakeholders involved in AIDS vaccine R&D, including scientists, health care workers, communities, politicians and the media.

Applied science

IAVI designs promising new AIDS vaccine candidates that can be quickly moved to the clinic to be tested in human trials. Together with research consortia organized around unique agreements on intellectual property, a shared scientific plan and division of tasks



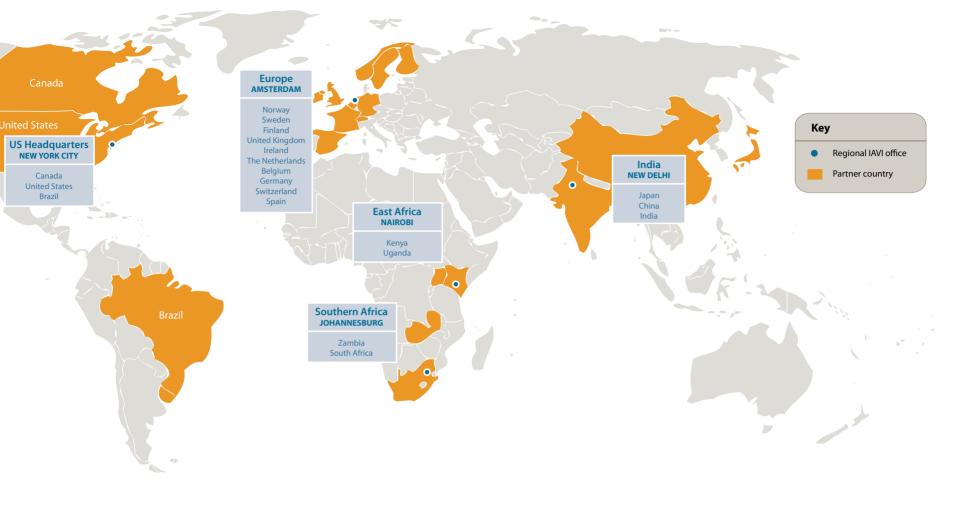
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are administrated. In addition to engaging academia, IAVI also has a programme to scan the biotechnology sector, and funds the application of promising technologies to advance AIDS vaccine R&D.

Clinical research

In collaboration with national research institutes and organizations, IAVI tests AIDS vaccine candidates in clinical trials. To date, the organization has taken six candidates to clinical trials in eleven countries in Africa, Europe, India and the US.

An important pillar in IAVI's strategic plan is to engage countries that need a vaccine most, in both AIDS vaccine research and product development. Significant resources were built in Eastern and Southern Africa, including laboratories and clinics and scientists, health care workers and communities were trained. Given the variability of HIV, it is essential that vaccine candidates are tested in regions across the world where different HIV subtypes circulate. However, the reason to conduct research in Africa is not only scientific. Doing AIDS vaccine research on this continent will also help to facilitate the ultimate roll-out of a vaccine and provides important benefits to communities where the research takes place.



Ensuring political and financial support for a global effort

A significant amount of IAVI's work is also geared towards raising awareness of the need for a vaccine and ensuring that there is sufficient political and financial support for AIDS vaccine development. This is done in cooperation with NGOs, parliamentarians, governments, scientists, media and communities across the globe.

In 2007 globally \$ 961 million was spent on AIDS vaccine R&D. While this seems to be

a significant figure, it represents less than one percent of the total annual global spending on health R&D. The funds for global AIDS vaccine R&D are raised predominantly by governments (some 80%). The contribution from Europe is approximately 10% (\$ 80 million in 2007), with the US being the largest funder (\$ 659 million). IAVI is now an important investor receiving funding from governments of eleven countries, the EU and private and philanthropic organizations.

The development of an AIDS vaccine is a

long-term and global effort. It is regarded as one of the greatest scientific challenges that we face today, and can only be achieved with worldwide commitment from all of us.

Further reading

If you want to learn more about IAVI or how you can help, please visit www.iavi.org or contact IAVI at info@iavi.org.

Read on global spenditure on Research & Development in the article *Should we mind the gap?* on page 20.