Vaccine Design and Development Lab

Translating **science** into **global** health impact

IAVI's Vaccine Design and Development Lab generates and develops innovative HIV and emerging infectious diseases vaccine candidates to address global public health needs.

Innovative vaccine research and development in Jersey City, New Jersey

IAVI's Vaccine Design and Development Laboratory (DDL) was established in 2008 and resides in a custom, state-of-the-art lab space in Jersey City. It is one of the world's leading viral vector vaccine research and development labs, known for innovation and generation of novel vaccine design concepts.

The DDL executes work across multiple phases of vaccine development including early research needed for vaccine design, preclinical evaluation of vaccine candidates, and preparation of the most promising candidates for transition to a vaccine manufacturer. Biosafety Level (BSL) 2 laboratories are outfitted for molecular cloning, cell culture, virology, protein chemistry, and immunology research.

The DDL aims to translate scientific discoveries into affordable, globally accessible public health solutions

- **HIV vaccine development**
  HIV prevention remains an urgent state, national, and global need, and a vaccine will be needed to end HIV as a public health problem of global importance.

- **Solutions to public health threats from emerging infectious diseases (EIDs)**
  The DDL leverages its HIV vaccine development experience to advance vaccines for EIDs. Since 2018, IAVI has been conducting R&D on separate vaccine candidates to prevent severe hemorrhagic fever disease caused by Lassa virus, Marburg virus, and Sudan virus. The U.S. Centers for Disease Control and Prevention has classified all three viruses as high-priority agents that pose a risk to national security. They have epidemic and bioweapon potential and a high case fatality rates.

- **Development of innovative technologies to address future outbreaks faster**
  The DDL, IAVI, and partners are working to develop processes to enable cost-effective, flexible manufacturing of vaccine stockpiles to ensure rapid response during outbreaks.

Pivotal work at the DDL has led to important progress in HIV and EID vaccine research

- Investigation and advancement of viral vector technology for delivering HIV vaccines.

- Development of the vesicular stomatitis virus (VSV) as a vector platform to deliver vaccine immunogens derived from serious pathogens including HIV, Lassa virus, Marburg virus, and Sudan Ebola virus.

- Contributions to identification of certain broadly neutralizing antibodies now being tested to prevent and treat HIV infection.

- Identification of an HIV envelope protein that has been used extensively for HIV structural studies and development of investigational vaccines.

As a key member of Jersey City's growing biotech community, the DDL is helping to transform the New York metro area into a hub for scientific innovation.

The DDL has a highly experienced staff and broad capabilities

The DDL has a staff of more than 20 highly experienced professionals, many of whom developed their expertise in different areas of the biopharmaceutical industry. IAVI senior leaders closely engaged in programs at the DDL also have past experience in leadership roles in the successful development of the Zaire Ebola virus vaccine during the 2014-16 outbreak.

IAVI partners with the State University of New York (SUNY) Downstate Medical Center Department of Comparative Medicine, where IAVI scientists conduct animal studies. Since 2006, the IAVI certified and/or licensed veterinary technicians working at the SUNY site have conducted 90 studies to assess vaccine safety, study immune responses to vaccination, and evaluate vaccine efficacy.

DDL funders

Work at the DDL is supported by the National Institutes of Health (NIH), the NIH National Institute of Allergy and Infectious Diseases (NIAID), the Government of Japan, the Defense Threat Reduction Agency (DTRA), the Biomedical Advanced Research and Development Authority (BARDA), and the Coalition for Epidemic Preparedness Innovations (CEPI).

IAVI's VSV-vectored vaccine candidates

Clinical development	
	Lassa fever virus*
	Sudan Ebola virus*
Preclinical development	
	HIV
	Marburg virus*

*Technology licensed from the Public Health Agency of Canada. Partners: Batavia Biosciences; George Washington University, KAVI-Institute of Clinical Research (Kenya), Kenema Government Hospital (Sierra Leone), La Jolla Institute for Immunology; LEAP4WA partners; MRC/UVRI and LSHTM Uganda Research Unit; National Public Health Institute of Liberia; Projet San Francisco/ Center for Family Health Research (Rwanda); Ragon Institute of MIT, MGH, and Harvard; Tulane University; University of Texas Medical Branch, Viral Hemorrhagic Fever Consortium.

> The DDL regularly trains the next generation of scientific research interns from local institutions, some of whom have been hired as IAVI researchers.

IAVI gratefully acknowledges the generous support provided by the following major funders:

Biomedical Advanced Research and Development Authority (BARDA) | Foundation for the National Institutes of Health | National Institute of Allergy and Infectious Diseases | amfAR, The Foundation for AIDS Research | Broadway Cares/Equity Fights AIDS | The City of New York, Economic Development Corporation | Congressionally Directed Medical Research Program (DoD) | GSK | The Hearst Foundations | Keith Haring Foundation | Merck & Co., Inc., Kenilworth, NJ, USA (known as MSD outside the USA and Canada)

And many other generous individuals and partners around the world

As of January 2025