



**To protect and sustain the health of the U.S. military, the viral disease research team at the Walter Reed Army of Institute of Research (WRAIR) works to develop and test new preventive and therapeutic drugs and vaccines, provide detailed characterization of specific pathogens and viral diseases, and support infectious diseases surveillance around the world.**

Historic accomplishments and enduring contributions to global health include vaccines to prevent influenza, Japanese encephalitis, and hepatitis A.

## Dengue

Up to 400 million new infections occur annually in over 100 countries resulting in millions of hospitalizations and tens of thousands of deaths. Recent outbreaks in Hawaii, Florida and Texas, persistent high-level transmission in Puerto Rico, and the mosquito vector's presence in large regions of the U.S. suggest an emerging domestic risk.

WRAIR researchers are working to model a safe and reproducible human infection to allow early down-selection of vaccine candidates. In addition, WRAIR is continuing to collaborate with DoD and corporate partners, such as GSK, Takeda and Sanofi Pasteur, to develop safe and efficacious U.S. FDA-licensed dengue vaccine.

## Chikungunya

Due to its high attack rate and potential to cause long-term disability, chikungunya poses a threat to force health readiness. Tens of thousands of cases have occurred in Puerto Rico. Transmission has occurred in Florida and the mosquito vector is present in large regions of the United States.

WRAIR scientists continue efforts to accelerate the development of vaccine candidates and a safe and predictive human challenge model.

### Successes in licensed vaccines

- First influenza vaccine in 1948
- Oral adenovirus vaccine for type 4 and 7 in 1980 and 2011.
- Japanese encephalitis virus vaccine in 1992, and an improved vaccine in 2009
- Hepatitis A vaccine in 1995





## Adenovirus

The leading causes of acute respiratory disease among basic trainees, adenovirus has previously resulted in thousands of hospitalizations per year and occasional deaths. Emerging adenovirus types (14 and 21) cause illness in both military recruits and civilian populations.

WRAIR developed the world's first oral adenovirus vaccine for types 4 and 7 in 1980 and guided the full relicensure of an adenovirus vaccine (types 3, 4 and 7) in 2011. Work continues to facilitate next generation vaccines with streamlined production methods and an expanded protection profile.

## Epidemic Surveillance and Pathogen Discovery

Emergence and spread of viral infectious diseases, both known and yet undiscovered, is a continuous threat. Rapidly spreading influenza pandemics, deadly Ebola outbreaks, and birth defect inducing Zika infections, are just a few examples of hazardous viral pathogens circulating in the world. WRAIR researchers conduct surveillance, characterization, and genetic tracking of current global viral epidemics, as well as scanning potential animal and insect hosts for yet undiscovered viral threats.

The Viral Diseases Branch at WRAIR is a leading DoD laboratory in this field, utilizing state of the art sequencing and bioinformatics platforms to provide early warning and aid in development of prevention strategies against viral epidemics.

For more information, including how to partner with WRAIR, call 301-319-9471 or email [debra.l.yourick.civ@mail.mil](mailto:debra.l.yourick.civ@mail.mil)

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