



## Generation of Wild Type and Mutant Ebola Virus from Cloned cDNA

WARF: P01214US02

Inventors: Yoshihiro Kawaoka, Gabriele Neumann, Luke Jasenosky

**The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in an Ebola "mini genome" useful for studying the virus as well as developing antiviral drugs and vaccines.**

### Overview

Ebola Virus Disease (EVD) is a severe and highly fatal hemorrhagic fever that affects humans and other mammals. It is caused by the Ebola virus, a single-stranded RNA virus that encodes seven structural proteins. Interhuman transmission of the Ebola virus is typically by blood or bodily fluids, though droplet and aerosol transmission may also occur. Once infected with EVD, the chance of mortality can be as high as 90 percent. One major reason for the current lack of effective treatments or vaccine availability for EVD is that there are no effective strategies of experimental mutagenesis. It would be useful to researchers to have a mechanism that allows study of the natural history and biology of the virus and generation of possible vaccines for clinical use.

### The Invention

UW-Madison researchers led by Dr. Yoshihiro Kawaoka have created a method for generating the Ebola virus entirely from cloned cDNA. Viral RNA was reversed transcribed and amplified, and resulting cDNA fragments were cloned into a vector with a consensus sequence determined. The T7 polymerase system was used to produce viral RNA for generation of the virus. Critical experiments were conducted to confirm key biological properties of the Ebola virus.

### Applications

- Studying pivotal events in the Ebola virus life cycle and infection
- Identifying essential regulatory elements and structure-function relationships in the Ebola virus life cycle
- Understanding Ebola virus pathogenicity
- Developing antiviral drugs and vaccines

### Key Benefits

- Any mutation can be introduced into the Ebola virus genome entirely from cloned cDNA

### Stage of Development

Key biological properties of the Ebola virus have been confirmed with this technique.

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