

Using Novel Methods to Develop Effective Vaccines



Yoshihiro
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Professor

CURRENT RESEARCH

Insight into dangerous influenza and ebola viruses drives effective vaccine development


Half a million people around the world die from influenza infections each year. Although influenza vaccines exist, frequent mutations in the viruses reduce their effectiveness and new influenza viruses can cause pandemics. These viruses cannot be eradicated because they are maintained in billions of wild birds. Likewise, Ebola viruses—which kill up to 90% of people infected—cannot be eliminated because we do not know how and where the virus is maintained in nature. There is an urgent need to improve vaccine and treatment options for the severe and often deadly infections caused by these viruses in order to eradicate their spread. Dr. Yoshihiro Kawaoka, Professor at the University of Wisconsin-Madison and the University of Tokyo is leading the way in identifying and developing novel vaccines and drugs to combat influenza and ebola viruses.

Dr. Kawaoka's research focuses on understanding how influenza and ebola viruses cause diseases. He developed a revolutionary system—the "reverse genetics" system—to generate and modify influenza and ebola viruses at will. Using this method, Dr. Kawaoka looks at how some influenza viruses cause deadly diseases, whereas others cause only mild infections, and at how these viruses transmit from person-to-person. The system allows the exchange of genetic material between deadly and non-deadly influenza viruses, so lethal viruses can be made safe for use in both influenza and ebola vaccine design and production. His system has helped researchers identify some of the mutations that make these viruses dangerous, but additional contributing factors have not yet been identified; therefore, it is essential that this research continues.

Dr. Kawaoka and his team of...

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AFFILIATION

 University of Wisconsin-Madison

AWARDS

- Robert Koch Prize, 2006
- Carlos Finley UNESCO Prize, 2015

RESEARCH AREAS

Health & Wellness, Wellness, Aging Research

FUNDING REQUEST

Your contribution will help fund Dr. Kawaoka's continued efforts to develop vaccines against influenza and ebola viruses. Your donations will help support the necessary costs for personnel, biosafety tools, chemical and biological reagents, and lab equipment for each project. The influenza prediction system and universal vaccine initiative cost \$5M each. The first phase of the ebola human clinical trials will also cost \$5M. Play a role in eradicating these deadly infections; fund Dr. Kawaoka.

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