

# C. Kai LAB.

## [Effective Utilization of Virus]

Department of Mechanical and Biofunctional Systems

Infectious Disease Control Science

Medical Science Graduate Program  
Pathology, Immunology and Microbiology

Graduate School of Agricultural and Life Sciences  
Veterinary Medical Sciences

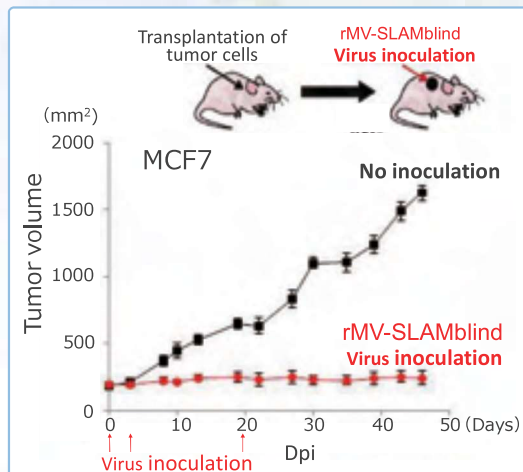
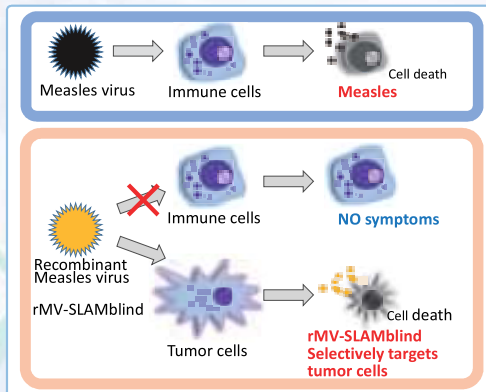
<https://www.kailab.iis.u-tokyo.ac.jp>

### *Aiming for effective use of morbillivirus*

Morbilliviruses, including measles virus, have the property of inducing strong immunity in the infected host, resulting in lifelong immunity. Our goal is to contribute to society based on the accumulation of many years of morbillivirus research.

### *Development of a new cancer treatment with recombinant measles virus*

We found that the HL strain of measles virus has a strong toxic effect on various tumor cells including breast cancer cells. We genetically modified the measles virus HL strain using reverse genetics to produce a recombinant virus (rMV-SLAMblind) that selectively targets only tumor cells and produces oncolytic activity without causing measles symptoms.



So far, rMV-SLAMblind shows remarkable antitumor effect in various tumor-bearing mouse models, suggesting that it is promising as a new cancer treatment method.

With funding and support from the Japan Agency for Medical Research and Development (AMED), translational research of the oncolytic measles virus is underway with an aim of starting a clinical trial.

### *Development of bivalent vaccines against infectious diseases*

The Kai LAB. succeeded in constructing the first reverse genetics system that produces infectious virus from genes and worked on the development of a bivalent vaccine against infectious diseases caused by various viruses, parasites and measles virus. Nipah virus was first identified in Asia, causing acute encephalitis with a human fatality rate of 90%. The Nipah virus vaccine using recombinant measles virus developed by the Kai LAB. was recognized to be a promising vaccine. With the large-scale support from the Coalition for Epidemic Preparedness Innovations (CEPI), our international joint research is making full-scale efforts toward the practical implementation and application of the world's first Nipah virus vaccine.

In 2021, we are still in the midst of fighting the new coronavirus SARS-CoV-2 causing COVID-19. In collaboration with Project Professor Yoneda, we are also focusing on the development of the new corona vaccine using of our experience in developing the Nipah virus vaccine.

