

YONEDA LAB.

Challenge to the viruses with cutting-edge technology



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We have developed a technology called reverse genetics to create RNA viruses from genes and succeeded in creating the "Nipah virus" for the first time in the world. It is an extremely dangerous virus that suddenly appeared in Asia. This innovation has led to fundamental research on Nipah virus, such as why its fatality rate is so high and why it is transmitted across animal species.



We have conducted basic research on viruses by using developed reverse genetics to identify viral proteins involved in pathogenicity and host interaction factors. By analyzing the intracellular behavior and functions of viral proteins, we have shown that viral proteins called accessory proteins are strongly involved in virulence (Fig. 1). We aim to unravel some mysteries of Nipah virus such as their specificity in hosts and tissues.

We are also developing vaccines using a vector of Morbillivirus, which is genetically close to Nipah virus (Fig. 2). We have successfully developed vaccines against COVID-19, influenza virus, rabies virus, and Nipah virus. In particular, the efforts toward practical application of the Nipah virus vaccine are being promoted through international collaborative research.

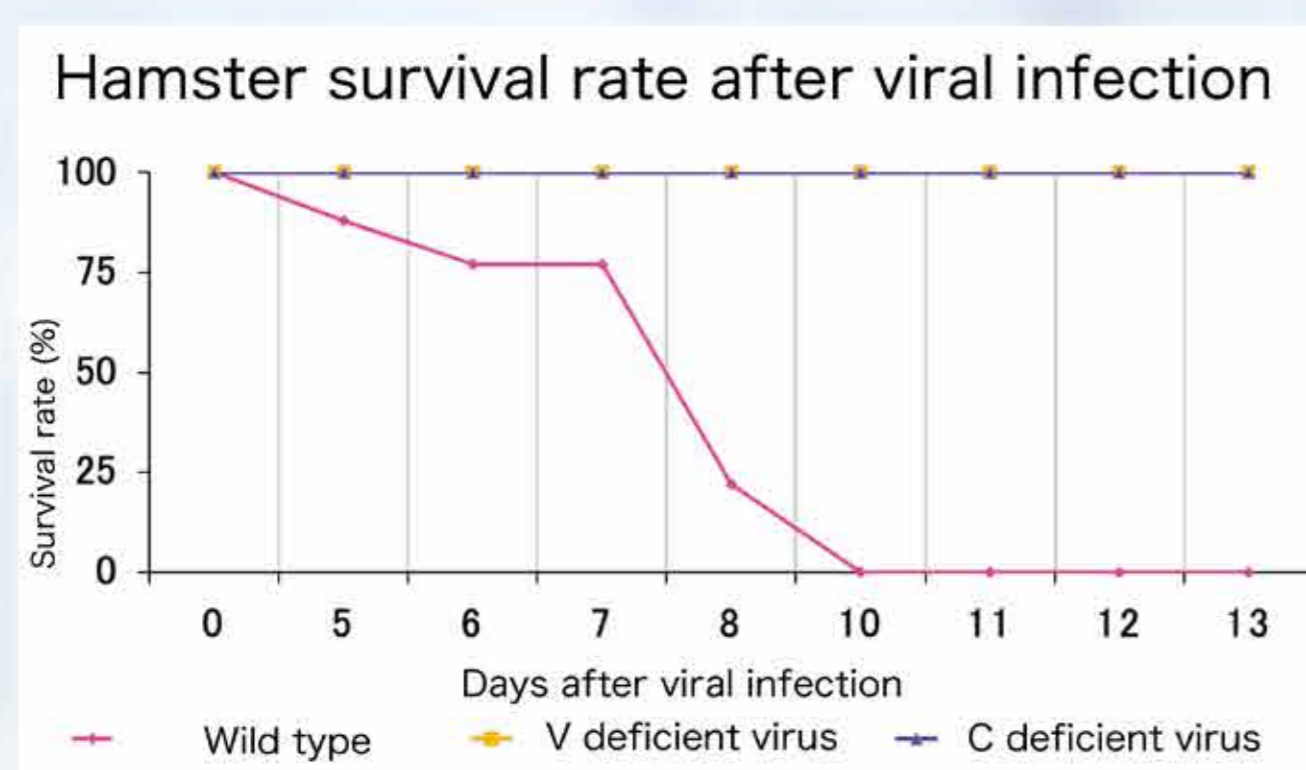


Fig 1. Hamster survival rate after Nipah virus infection.

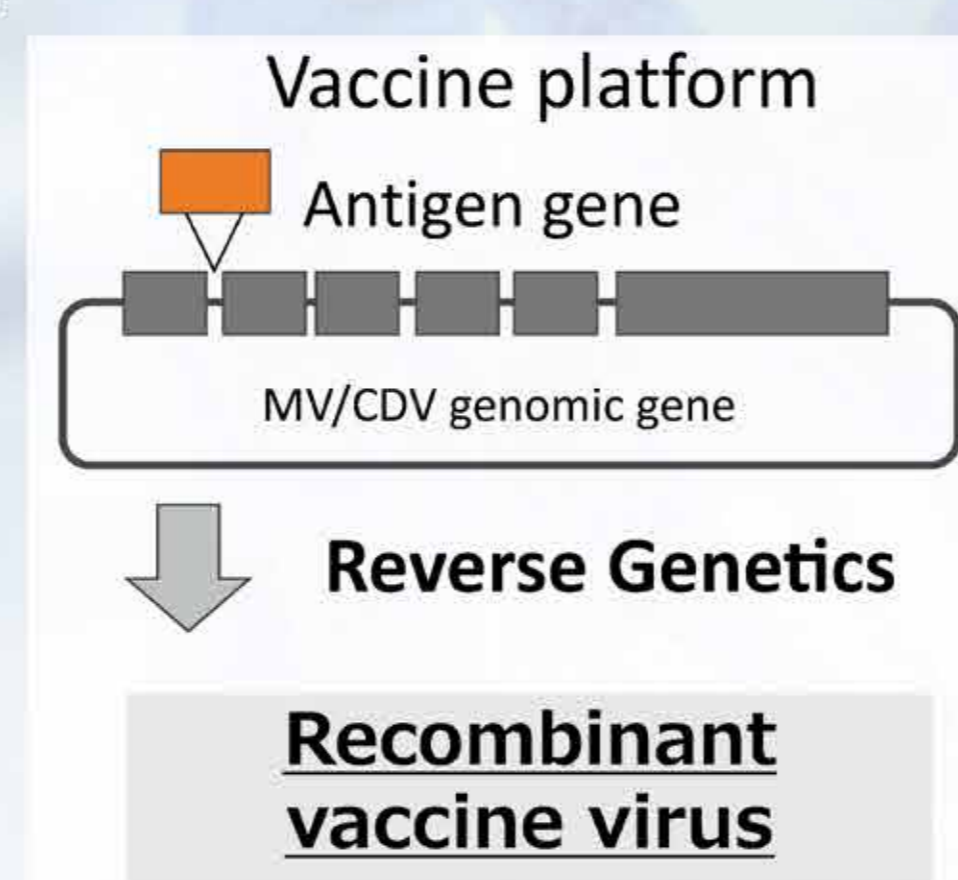


Fig 2. Production of recombinant vaccine virus

