

We are surrounded by a lot of microbes. Virus is one of microbes and causes disease on animal and plant. Our laboratory is focused to veterinary and zoonotic viral disease, especially neurovirology. We are interested in Borna disease virus (BoDV) that is etiological agent of Borna disease. Borna disease has been known over 100 years as a fatal neurological disease of horses and sheep in central Europe. At present, it is recognized as an emerging disease in cats, dogs, birds, and a broad host range in warm-blooded animals, including humans. BDV infection in experimental animals has been used to study the pathogenesis of virus-induced central nervous system damage and as a model for specific human diseases, e.g., autism. Classical BD is in large part due to immunopathogenic damage to the nervous system by blood-borne inflammatory cells. Responses to BDV infection vary according to differences in host-specific factors, e.g., species, animal strain, or age of the host at the time of infection. However, the definite mechanism underlying disease outcome is not fully clarified yet. To study disturbances of movement and behavior in BDV-infected animals, we examined the following points: 1) comparing pathogenesis in rats infected with several viral strains, 2) contribution of gene expression of TGF- $\beta$  family in CNS and viral pathogenesis, and 3) mechanism of changes in virus genome with adaptation to host.

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