学位論文内容の要旨
Abstract of the dissertation

博士の専攻分野の名称：博士（獣医学）　　氏名：ENAS HAMED MAHMOUD ELKHATEEB
Name

学位論文題名
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The role of mouse 2', 5'-oligoadenylate synthetase 1 paralogs
（マウス 2', 5'－オリゴアデニル酸合成酵素 1 パラログの役割）

The interferon-induced oligoadenylate synthetase (OAS) family is one of the most important immune response proteins to the viral infection. The OAS protein binds dsRNA and is activated to produce 2',5'-oligoadenylates, which lead to the activation of latent form of RNase L, resulting in degradation of cellular and viral RNA and inhibition of viral replication. In mice, the *Oas* gene family locates on chromosome 5. The mouse *Oas* gene locus undergoes a recent series of duplication event, leading to the presence of eight paralogs of *Oas1* genes (*Oas1a* through *Oas1h*) that forms *Oas* gene cluster with the *Oas2*, *Oas3* and two *OasL* (*OasL1* and *OasL2*) genes. Previous studies demonstrated that the mouse *Oas1b* gene conferred resistance to the flavivirus infection in mice; however, the antiviral activity of other mouse *Oas1* gene family is still unknown. Therefore, in the present study, we have evaluated the mouse Oas1 paralogs regarding the enzymatic activity and antiviral activity against the two neurotropic flaviviruses, West Nile virus and tick-borne encephalitis virus. The mouse *Oas1* genes were cloned from C57BL/6J (B6) as well as the *Oas1b* derived from feral mouse strain, MSM. The obtained results demonstrated that only Oas1a and Oas1g showed enzymatic activity. Although MSM-derived Oas1b showed antiviral activity to both viruses, all B6-derived OAS paralogs did not show antiviral activity. These results suggest that Oas1a and Oas1g play a role in potentiating viral RNA-induced interferon response in the cell, whereas the Oas1b

works as a specific anti-flavivirus factor unless it is mutated. However, the role of other paralogs is unknown and should wait for further investigation.