



## **Recombinant hybrid infectious hematopoietic necrosis virus (IHNV) carrying viral haemorrhagic septicaemia virus (VHSV) G or NV genes show different virulence properties**

**Einer-Jensen, Katja; Biacchesi, S.; Stegmann, Anders; Bremont, M.; Lorenzen, Niels**

*Publication date:*  
2011

[Link back to DTU Orbit](#)

*Citation (APA):*

Einer-Jensen, K., Biacchesi, S., Stegmann, A., Bremont, M., & Lorenzen, N. (2011). *Recombinant hybrid infectious hematopoietic necrosis virus (IHNV) carrying viral haemorrhagic septicaemia virus (VHSV) G or NV genes show different virulence properties*. Abstract from 15th International Conference on Diseases of Fish and Shellfish, Split, Croatia.

---

### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

RECOMBINANT HYBRID INFECTIOUS HEMATOPOIETIC NECROSIS VIRUS (IHNV)  
CARRYING VIRAL HAEMORRHAGIC SEPTICAEMIA VIRUS (VHSV) G OR NV GENES  
SHOW DIFFERENT VIRULENCE PROPERTIES

**K. Einer-Jensen<sup>1</sup>, S. Biacchesi<sup>2</sup>, A. Stegmann<sup>1</sup>, M. Bremont<sup>2</sup> and N. Lorenzen<sup>1</sup>**

<sup>1</sup>National Veterinary Institute, DTU, Aarhus, Denmark

<sup>2</sup>INRA, Jouy, France

Viral haemorrhagic septicaemia virus (VHSV) is the economically most important viral disease in European rainbow trout farming. The virus was introduced to fresh water farms in the 1950ies from a reservoir of VHSV in the marine environment. Isolates from wild marine fish and fresh water farms are difficult to distinguish serologically but they show different virulence profiles: marine isolates typically cause little or no mortality in rainbow trout fry following experimental waterborne challenge, while freshwater isolates often kill the majority of the fish. Genetic analysis reveal that the change in host range (to include rainbow trout) likely have occurred several times. Virus from the marine environment therefore continues to represent a threat to the expanding trout aquaculture industry in the marine environment. Identification of potential virulence markers are therefore of great importance.

By a reverse genetics approach using the related novirrhadovirus infectious hematopoietic necrosis virus (IHNV) as basis, four hybrid IHNV-VHSV variants were generated. These chimeric variants included substitution of the IHNV glyco(G) or nonstrutral (Nv) protein with the corresponding G or Nv-protein from either a freshwater or a marine VHSV strain. Following rescue of the hybrid viruses, comparative challenge experiments in rainbow trout fingerlings have been performed. The pathogenicity of the recombinant IHNV-VHSV hybrid viruses were similar, regardless of whether the G or Nv originate from marine or fresh water VHSV. Recombinant IHNV gained higher virulence following substitution of the homologous G gene with the VHSV G gene, while the opposite was the case following substitution of the Nv gene. These findings suggest that higher virulence of VHSV compared to IHNV might be related to the G protein, while the VHSV Nv may not efficiently support *in vivo* propagation of IHNV.

*This work was supported by The Danish Agency for Science (project "VHSV VIRULENCE (09-065033/FTP)". More info at <http://www.dtu.dk/sites/VHSVIRULENCE.aspx>*

*Poster at 15th International Conference on Diseases of Fish and Shellfish organized by the EAFP. At the Radisson Blu Hotel, Split, Croatia 12-16 September 2011*