

# IFN Receptor CRFB3 and CRFB4 on NNV Replication in Orange-spotted Grouper

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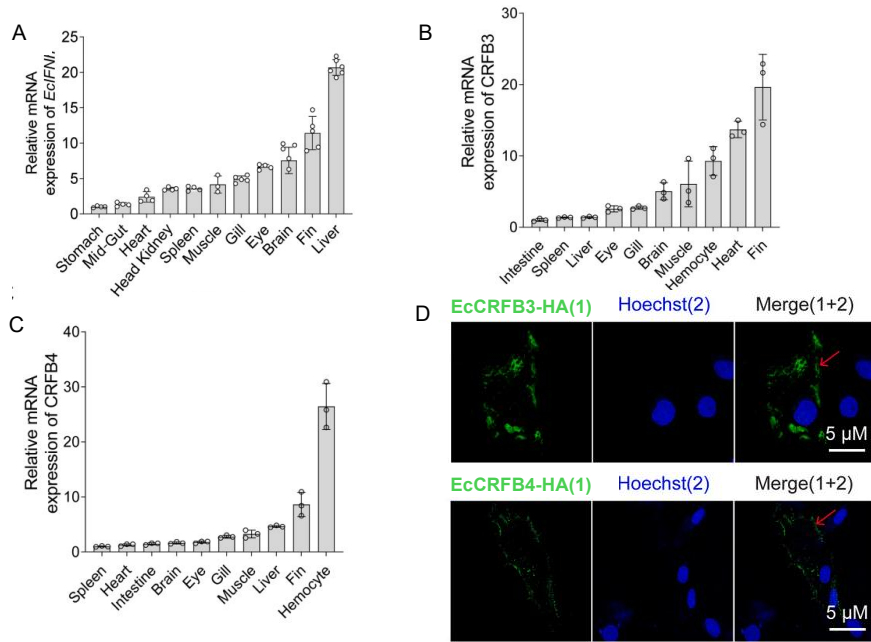
## Introduction

The orange-spotted grouper *Epinephelus coioides*, an economically important fish, is susceptible to nervous necrosis virus (NNV) infection. The mortality rate of NNV-infected larvae and juvenile fish is up to 100%. On microbial invasion, cellular pattern recognition receptors detect the pathogen-associated molecular patterns, initiate a cascade of signaling events, and lead to IFN production. IFN-I recognize and bind receptors of type I interferon, inducing the production of diverse interferon-stimulated genes to establish an antiviral state. Thus, our study was designed to investigate the regulatory effects of IFN $\alpha$  and two IFN receptor on NNV replication in orange-spotted grouper.

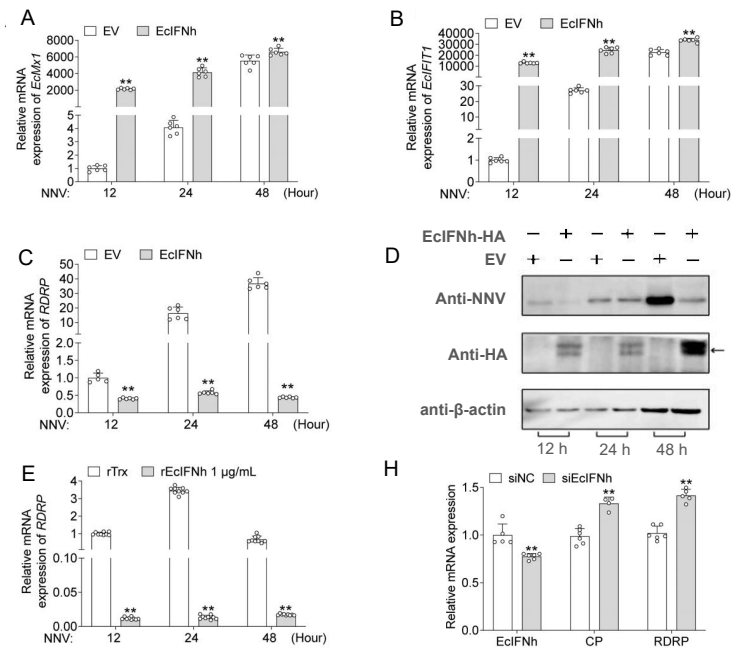


*Epinephelus coioides* (斜带石斑鱼)

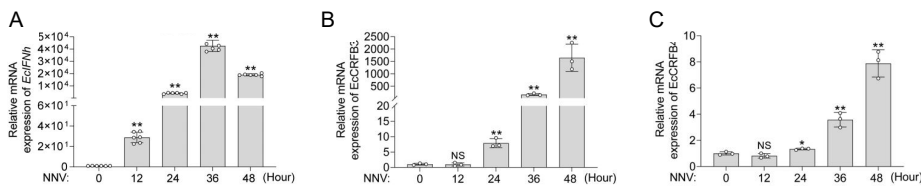
## Results



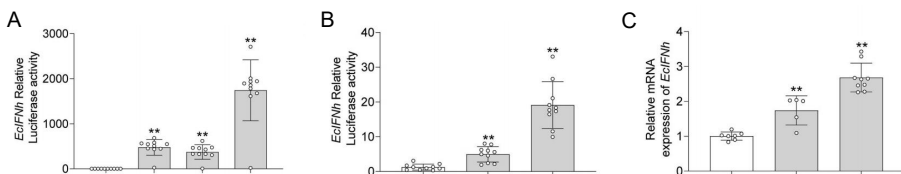
**Figure 1.** Tissue distribution and subcellular localization of EclIFN $\alpha$ , EcCRFB3 and EcCRFB4.



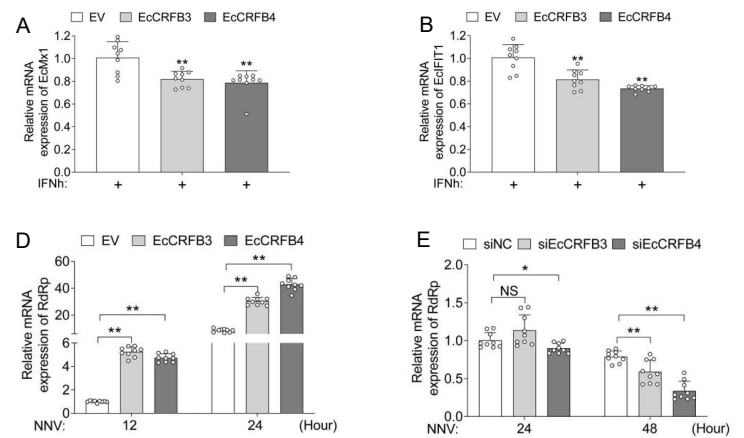
**Figure 4.** EclIFN $\alpha$  enhance the host's immunity via activating ISGs expression to inhibit NNV replication



**Figure 2.** Upregulation of EclIFN $\alpha$ , EcCRFB3 and EcCRFB4 following OGNV infection.



**Figure 3.** Transcription of EclIFN $\alpha$  is mainly regulated by EcMDA5, EcMAVS, EcSTING, EcIRF3 and EcIRF7.

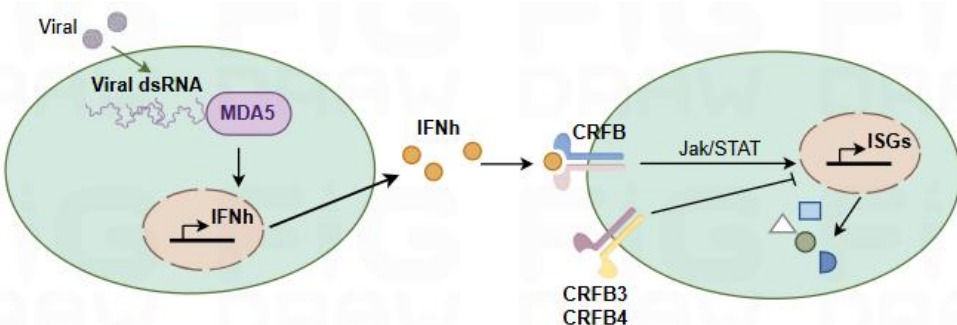


**Figure 5.** EcCRFB3 or EcCRFB4 can inhibit the expression of IFN-I-induced ISGs to promote NNV replication.

## Conclusions

- EclIFN $\alpha$  significantly enhanced the expression levels of ISGs against NNV infection and increased the immune response in fish, exhibiting potential applications.
- EcCRFB3 or EcCRFB4 exert negative regulations in the IFN-I signaling pathway.

## Acknowledgment



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