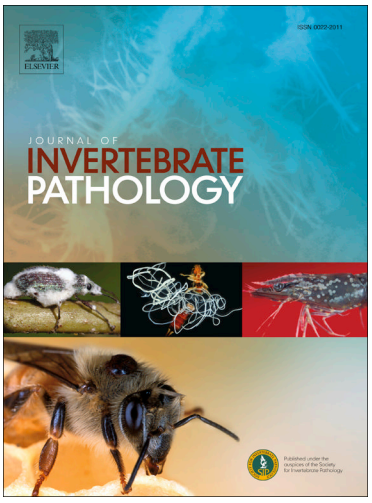

Discovery of anti-viral molecules and their vital functions in *Bombyx mori*

Peng Lü, Ye Pan, Yanhua Yang, Feifei Zhu, Chengjun Li, Qin Yao, Keping Chen

PII: S0022-2011(17)30537-2
DOI: https://doi.org/10.1016/j.jip.2018.02.012
Reference: YJIPA 7056

To appear in: *Journal of Invertebrate Pathology*

Received Date: 10 August 2016
Revised Date: 3 January 2018
Accepted Date: 13 February 2018

Please cite this article as: Lü, P., Pan, Y., Yang, Y., Zhu, F., Li, C., Yao, Q., Chen, K., Discovery of anti-viral molecules and their vital functions in *Bombyx mori*, *Journal of Invertebrate Pathology* (2018), doi: https://doi.org/10.1016/j.jip.2018.02.012

Discovery of anti7-viral molecules and their vital functions in *Bombyx mori*

Peng Lü [a], Ye Pan[a,b], Yanhua Yang[a], Feifei Zhu [a], Chengjun Li [a], Qin Yao[a], Keping Chen[a,*]

[a] *Institute of Life Sciences, Jiangsu University, Zhenjiang 212013, China;*

[b]*School of Food and Biological Engineering, Jiangsu University, Zhenjiang, 212013, China*

* Corresponding author. Tel.: +86 511 88791923; Fax: +86 511 88791923

E-mail addresses: penglu@ujs.edu.cn (P. Lü), panye@ujs.edu.cn (Y. Pan), yanhuayang@126.com (Y. H. Yang), zhufeifei0921@163.com (F. F. Zhu), (C. J. Li), yaoqin@ujs.edu.cn (Q. Yao), kpchen@ujs.edu.cn (K. P. Chen)

Abstract

The silkworm *Bombyx mori* (*B. mori*), a lepidopteran model organism, has become an important model for molecular biology researches with its genome completely sequenced. Silkworms confront different types of virus diseases, mainly including those caused by Bombyx mori nucleopolyhedrovirus (BmNPV), Bombyx mori densovirus type 1 (BmDNV-1), Bombyx mori bidesovirus (BmBDV) which was termed as Bombyx mori densovirus type 2 (BmDNV-2) or Bombyx mori parvo-like virus (BmPLV) before in sericulture. *B. mori* offers excellent models to study the molecular mechanisms of insect innate immune responses to viruses. A variety of molecules and pathways have been identified to be involved in the immune responses in the silkworm to viruses, such as the antimicrobial peptides, prophenoloxidase-activating system, apoptosis, ROS, small RNA and related molecules. Here in this review, we summarize the current research advances in molecules involved in silkworm anti-virus pathways. Moreover, taking BmNPV as an example, we proposed a schematic model of molecules and pathways involved in silkworm immune responses against virus infection. We hope this review can facilitate further study of antiviral mechanisms in silkworm, and provide a reference for virus diseases in other organisms.

Highlights

- A schematic model of molecules and pathways from *Bombyx mori* against BmNPV is proposed.
- Autophagy is proposed to be involved in virus replication in silkworm.
- Underline the important of using proper internal references in virus infection researches in silkworm.

Keywords: *Bombyx mori*; BmNPV; BmCPV; BmDNV; BmBDV; autophagy; immune response; molecular mechanism