Construction and Application of a Baculovirus Genomic Library

Yin Chen[a,b], Xu'ai Lin[b], Yongzhu Yi[b], Yiyu Lu[a], and Zhifang Zhang[b,*]

[a] Zhejiang Provincial Center for Disease Control and Prevention, Hangzhou, 310009, China

[b] Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, No. 12, Zhongguancun South Street, Beijing, 100081, China. Fax: +86-10-82 10 51 36. E-mail: zhangzf@caas.net.cn

* Author for correspondence and reprint requests

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A random genomic library of the baculovirus *Bombyx mori* nucleopolyhedrovirus (BmNPV) was constructed and viral factors were identified by screening the regulator(s) for *helicase* gene expression. DNAs of 238 library plasmids were used to co-transfect with the reporter plasmid, pHp510-luc, in which the *luciferase* (*luc*) gene was driven by the baculovirus *helicase* promoter. Results showed that eight plasmids of the library strengthened the luciferase activity more than 1000-fold. Sequence analyses revealed that all of the eight plasmids contained an intact *ie-1* coding region. To confirm the reliability of the screening library, pHp510-luc was co-transfected with the cloned early gene which revealed that the BmNPV IE-1 was the only early factor that could stimulate the *helicase* promoter. The function analyses suggested that genome-wide screening factors through the library are powerful means to investigate the transcriptional regulation of dsDNA viruses.

Key words: Baculovirus, Genomic DNA Library, Helicase Promoter