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An integrated view of protein homologue groups and functional genomic development of baculoviruses: towards understanding baculoviral infection mechanism and improving baculoviral expression vector

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Summary. – This study aimed to gain a comprehensive view of protein homologue groups of baculoviruses and elaborate the correlation between protein conversation and functional roles in the viral biphasic infection cycle. A comprehensive identification of homologue groups among 76 baculoviral genomes was performed, supplying a global view of the distribution of 992 homologue groups among baculoviruses. Fifty-six missed proteins from previous annotated genomes were added, updating AC76 as a new number found in all baculoviruses except *Deltabaculovirus* and the LEF 10 (AC53a) as a new number present in all the *Alphabaculovirus* and *Betabaculovirus*. Accompanied by an updated encyclopedia of functional genomic development, an integrated view of the correlation between protein conversation and functions was summarized for *Autographa californica* nucleopolyhedrovirus (AcMNPV). The AC106/107 and ODV-E18 were screened out as underestimated proteins and would need investigations on their detailed roles in viral infection cycle. A baculovirus-host network was constructed based on archive exploration, indicating that the ODV-E18 would be the core of viral interaction network. Further, potential functional domains and sites of ODV-E18 were further analyzed, supplying future research targets for exploring their detailed role in the regulation of the BV/ODV formation mechanism. This would facilitate further baculoviral genome annotation, functional genomic investigation and construction of a baculoviral minigenome that could be exploited as high-capacity expression vector.

Keywords: baculovirus; biphasic infection; baculoviral expression vector; phylogenomic; virus-host network

Introduction

The family *Baculoviridae* is a group of insect-specific large DNA viruses isolated from members of the orders of Lepidoptera, Hymenoptera, and Diptera, and divided into four genera, including *Alphabaculovirus*, *Betabaculovirus*, *Gammabaculovirus*, and *Deltabaculovirus* (Harrison *et al*., 2018a). The *Alphabaculovirus* can be subdivided into two groups, I and II based on phylogenetic analysis (Harrison *et al*., 2018b; Herniou and Jehle, 2007). Members of *Alphabaculovirus* have been characterized by a typical biphasic infection cycle, in which two kinds of progeny virions are produced: occlusion-derived viruses (ODVs), which are embedded in occlusion bodies (OBs) and are responsible for *per os* infection in the insect midgut, and the budded viruses (BVs) responsible for systemic infection inside the insect host (Slack and Arif, 2007).

The BV and ODV differ in their envelope proteins that are responsible for their distinct functions (Hou

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Abbreviations: AcMNPV = *Autographa californica* nucleopolyhedrovirus; BV = budded viruses; IAP = inhibitors of apoptosis; ML = maximum likelihood; NLS = nuclear localization signal; NES = nuclear export signal; OB = occlusion bodies; ODV = occlusion-derived viruses; PIF = *per os* infectivity factor; TM = transmembrane domain

et al., 2013). Their nucleocapsids contain the covalently closed, double-stranded DNA (dsDNA) with a genome size ranging from 80 to 180 kb with 80–190 open reading frames (ORFs) (Hayakawa *et al*., 1999; Lauzon *et al*., 2004). So far, a total of 38 conserved core genes have been found to be present in all sequenced baculoviral genomes (2012; Javed *et al*., 2017; van Oers and Vlak, 2007; Zhu *et al*., 2018). Among the 38 conserved core genes, 37 genes were identified by Garavaglia *et al*. (2012). Recently, the AC110 missed in some previous annotated baculoviral genomes (Javed *et al*., 2017), was identified as the 38th gene shared by all baculoviruses. In addition, 26 genes were found to be present at least in both, the *Alphabaculovirus* and *Betabaculovirus* (Garavaglia *et al*., 2012).

Analyses of protein conservation have promoted investigations on roles of viral proteins in infection processes, such as ODV envelopment, virion entry and transport, DNA replication and processing (Braunagel and Summers, 2007; Li *et al*., 2018; Liu *et al*., 2020; Vanarsdall *et al*., 2007; Volkman, 2007; Wang *et al*., 2019a; Zhang *et al*., 2018b). It also has promoted the improvement of baculoviral expression vector. The baculoviral expression vector of a large size genome of about 133 kbp provides multiple insertion sites and high capacities for expression of multiple protein complexes. It has been modified by the deletion of BV non-essential proteins of both viral chitinase (V-ChiA) and viral cathepsin (V-CATH) to improve secretion and stability of recombinant proteins (Hitchman *et al*., 2011). Furthermore, the baculoviral expression vector has been improved as different powerful systems for recombinant expression and post-translational modifications of multiple proteins, such as MultiBac (Berger *et al*., 2004), SweetBac (Palmberger *et al*., 2012) and OmniBac systems (Vijayachandran *et al*., 2013). Based on a combination of baculoviral protein conservation and functional genomic studies, the minimal and functional expression vector, which would contain less non-essential gene content but still be infectious and able to propagate and produce heterologous protein in cell culture has been already proposed by Vijayachandran *et al*. (2013).

With the development of functional genomics of baculoviruses and increasing sequenced baculoviral genomes, in this study, we firstly performed phylogenomic analysis of 76 baculoviral genomes based on 38 core proteins, and further supply a global and integrated view of baculoviral protein conservation and functional genomic investigations. The AC106/107 and potential functional domains and sites of ODV-E18 were supplied as future research targets for exploring BV/ODV formation mechanism. These results would facilitate further baculoviral genome annotation, understanding of baculoviral infection mechanism and future construction of a more powerful baculoviral expression vector with a minigenome.

Materials and Methods

Genome and protein databases. A total of 76 individual genomes of baculoviruses with known reports were collected from the GenBank database (www.ncbi.nlm.nih.gov) (Table S1). The genomes of 53 alphabaculoviruses, 19 betabaculoviruses, 3 gammabaculoviruses, and 1 deltabaculovirus were included. The non-redundant annotated protein dataset of each baculovirus genome was acquired from NCBI. Recently, the AC110 was identified as a conservative *per os* factor (PIF) in all baculoviruses, which rectified previous missing annotations of their presence in the gammabaculoviruses and deltabaculoviruses (Javed *et al*., 2017). To avoid such issue, the proteins were re-predicted for all the viral genome sequences using the getorf (http://emboss.bioinformatics.nl/cgi-bin/emboss/getorf) and proteins ≥ 50 aa were kept. Thus, each baculovirus had three different datasets: a) the Individual Genome DataSet (IGD) containing the corresponding genome sequence, b) the Individual Proteome DataSet (IPD) containing the corresponding annotated proteins, and c) the Individual Repredicted Proteome DataSet (IRPD) containing the corresponding repredicted proteins.

Identification of homologue groups among baculoviruses. An overview of the identification of baculoviral homologue groups was demonstrated in a schematic diagram (Fig. S1). In the first round, the OrthoFinder (v2.3.14) (Emms and Kelly, 2019) was used for all-versus-all BLAST search among all the IPDs to identify homologue groups present in at least two baculoviral genomes, with the settings -S blast -M msa. The disability of orthology prediction tools for identification of all orthologs has been described (Garavaglia *et al*., 2012), and also found by the OrthoFinder in this study. Thus, the OrthoFinder identified homologue groups were used as the Primary Homologous Group Database (PHGD), and the PHGD was further manually annotated and merged according to references (Table S1) of the genome sequences and previous identification of the remote orthology (Garavaglia *et al*., 2012), and resulted in a Revised Homologous Group Database (RHGD). In the second round, the RHGD was subjected to all-versus-all search against the IRPDs with the settings "-S blast -M msa –os" in the second round to screen candidate homologues that were not annotated in the IPDs. The candidate homologues overlapping ≥ 25 aa with the ORFs present in the IPD were excluded and the remaining candidate homologues were then manually checked using BLASTP (McGinnis and Madden, 2004) in NCBI to search homologues in baculoviruses with an inclusion threshold of 1e-5. Further, local TBLASTN was performed by searching against the corresponding viral genome sequences using BioEdit 7.5.2 (Alzohairy, 2011) with an expected threshold of 1e-5 to

identify candidate homologues, and all the selected candidate homologues were manually checked using BLASTP (McGinnis and Madden, 2004) as described above. The Final Homologous Group Database (FHGD) containing all the sequences of individual homologue groups and a statistical matrix of presence of homologous proteins in individual baculoviruses were used for further analysis below.

Phylogenomic analysis of 76 baculoviruses. All the homologue groups present in all of the 76 baculoviral genomes were subjected to MAFFT (v7.310) alignment using the iterative refinement options G-INS-i with the settings --globalpair --maxiterate 1000 (Nakamura *et al*., 2018). The alignment proteins were filtered using the Gblocks (v0.91b) (Talavera and Castresana, 2007) with the settings –t = p -b1 = 39 -b2 = 40 -b3 = 10 -b4 = 2 -b5 = h -e = -gb, and then concatenated in a stationary order (AcMNPV ORF order) using TBtools (v1.046) (Chen *et al*., 2020) and PhyloSuite (v1.2.1) (Zhang *et al*., 2020). A full tree search for protein models was then performed using the IQ-TREE (v1.6.12) (Minh *et al*., 2020) with the settings -m MF -mtree -nt 4 (Kalyaanamoorthy *et al*., 2017). Then, phylogenetic inference using maximum likelihood (ML) was performed by IQ-TREE using the best protein model with the settings iqtree -m LG+F+R7 -bb 10000 -alrt 10000 -nt 4 –bnni, supplying branch support with SH-aLRT value (Shimodaira–Hasegawa approximate likelihood ratio test) (Anisimova *et al*., 2011) and ultrafast bootstrap (UFboot) value. The resulted file was used for further construction of an ultrametric tree (also known as time tree) with the RelTime method (Tamura *et al*., 2012) implemented in MEGA X (Kumar *et al*., 2018) following the well-illustrated protocol (Mello, 2018). The temporal information of the calibration points for NeleNPV (*Neodiprion lecontei* NPV) and CpGV (*Cydia pomonella* granulosis virus) and that for CpGV and AcMNPV (Theze *et al*., 2011) was used for calibrating the relative node ages. The FigTree (http://tree.bio.ed.ac.uk/software/figtree/) was used for viewing the acquired tree file and further construction of phylogenetic tree with manual modifications.

Gain and loss of proteins among the baculoviruses. The analysis of expansion and contraction of protein homologue groups was performed using the CAFÉ 4 (De Bie *et al*., 2006) following the software tutorial. The major input files used were the newick-formatted ultrametric tree above and a tab-delimited txt file containing gene family data (De Bie *et al*., 2006). The parameter *p*-value was set as 0.01. The command 'lambda -s' was used for estimation of the λ-value (defined as the probability of both gene gain and loss per gene per unit time in the phylogeny).

Construction of baculovirus-host interaction network. For comprehensive understanding of viral infection mechanism, a literature survey was performed for collecting viral DNA/protein-protein interactions of the baculoviruses and virus-host protein interactions (Table S2). The interaction network was constructed using the Cytoscape (v3.8.0) (Shannon *et al*., 2003) following the software tutorial.

Bioinformatics analysis of ODV-E18. The conserved motifs in proteins were searched using the MEME (Bailey and Elkan, 1994). The putative signal peptide (SP), transmembrane (TM) domain, nuclear localization signal (NLS) and nuclear export signal (NES) were predicted using SignaIP 5.0 (Almagro Armenteros *et al*., 2019), TMHMM 2.0 (Krogh *et al*., 2001), SeqNLS (Lin and Hu, 2013) and NetNES 1.1 (la Cour *et al*., 2004), respectively. In addition, N- glycosylation sites and phosphorylation sites were predicted using NetNGlyc 1.0 (http://www.cbs.dtu.dk/services/NetNGlyc/) and NetPhos 3.1 (Blom *et al*., 1999), respectively.

Results

Phylogenomic tree of baculoviruses based on 38 core genes

The homologue groups of 38 core genes were identified among the 76 genome-sequenced baculoviruses, with 11 newly annotated proteins (in baculoviral IRPDs) in 3 homologue groups of AC78, P6.9 (AC100) and PIF7 (AC110) (Table S3). Phylogenomic inference with concatenated 38 core genes was generated (Fig. 1) and then molecular clock inference was computed according to the previous age estimation of baculoviruses (Theze *et al*., 2011). The topology of the resulted ML phylogenetic tree with timeline classified all the 76 baculoviruses into four clades corresponding to the four genus of the family *Baculoviridae*, consistent with previous tree inference (Harrison *et al*., 2017; Santos *et al*., 2018).

Comprehensive identification of baculoviral homologues

In combination of application of the orthology prediction tool OrthoFinder, reannotation of baculoviral genomes, manual BLASTP analysis and literature exploration (Garavaglia *et al*., 2012; Javed *et al*., 2017), a total of 992 homologue groups were identified, among which, 429 homologue groups were with the taxon occupancy of ≥ 2 species. Among the 429 homologue groups, 56 proteins in 25 homologue groups were newly annotated (Table S3) in baculoviral IRPDs, including homologues of AC78, P6.9 (AC100), PIF7 (AC110), PIF9 (AC108) present in all baculoviruses, and three proteins present in all the alphabaculoviruses and betabaculoviruses (Garavaglia *et al*., 2012), including LEF3 (AC67), TLP (AC82) and P24 (AC129). In addition, the new annotation of the AC76 homologue in the *Peridroma sp.* NPV (PespNPV) IRPD facilitated identification of AC76 as a new number found in all baculoviruses without the CuniNPV (Table S3), while the LEF 10 (AC53a) was identified as a new number that

was present in all the members of genera *Alphabaculovirus* and *Betabaculovirus*.

Additionally, the literature-based manual checking of fused proteins was performed to refine the statistical matrix of number of homologues present in the individual baculoviruses. Each of both proteins in the fusion protein form was considered to be present in the corresponding baculovirus. Taking the GP37/V-Ubi (viral ubiquitin) in *Spodoptera littoralis* MNPV (SpliMNPV) as an example, both of numbers of GP37 and V-Ubi in statistical matrix were manually revised as "1", but not as "1" for only one protein. Thus, this supplied a comprehensive identifica-

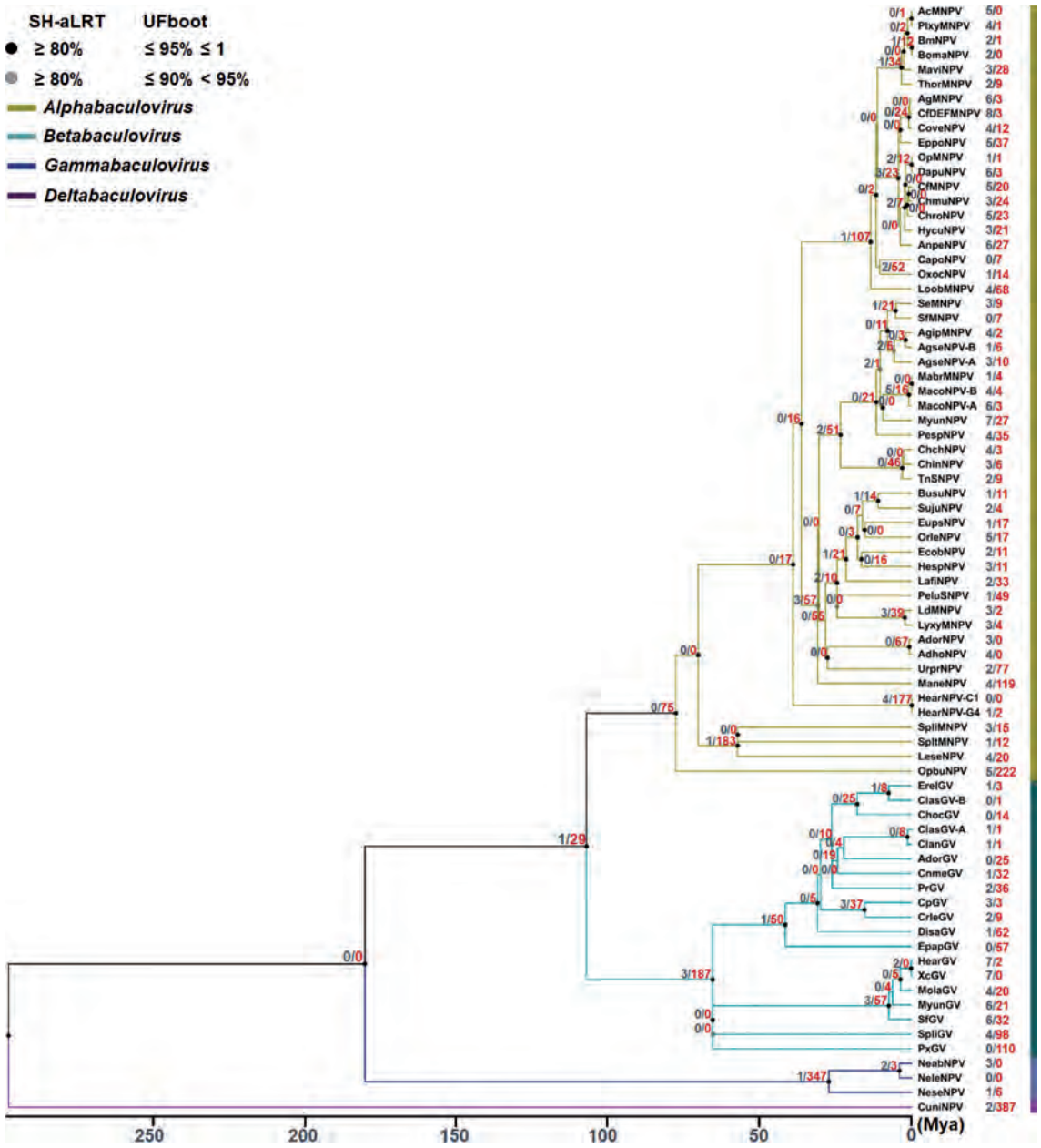

Fig. 1

TimeTree with mapped gain and loss of homologue groups (taxon occupancy of ≥ 2 species) based on the maximum likehood (ML) inference using the concatenated sequences of 38 core proteins from 76 baculoviruses (Table S1)

The branch support with SH-aLRT value (measurement of confidence in given branches) and ultrafast bootstrap (UFboot) value was determined using a SH-like method implemented in the IQ-TREE software. Mya: millions of years ago. -/-: amount of gain/loss of homologue groups (indicated at the far right after the virus species acronyms).

tion of baculoviral protein homologues and a global and updated view of their distribution in genomes of the baculovirus species. Further, all the 429 homologue groups with the taxon occupancy of ≥ 2 species (Fig. 1) were mapped on the phylogenetic tree (Fig. 1), demonstrating a global view of gene gain and loss which are indicated at the far right after the virus species acronyms (Fig. 1).

Integrated view of protein conservation and functions of baculoviral homologue groups

All the distributions of 429 homologue groups with a taxon occupancy of ≥ 2 species (Table S3) were further summarized (Table S4): 38 core proteins present in all baculoviruses (Garavaglia *et al*., 2012; Javed *et al*., 2017), and 5, 7 and 25 conserved in alphabaculoviruses, betabaculoviruses, and gammabaculoviruses, respectively (Table S4). For understanding of the correlation between conservation and functional importance of proteins, a comprehensive literature view of functional genomic studies of baculoviruses was summarized (Table 1 and Table S5) and focused on studies on AcMNPV proteins and their homologues in BmNPV and HearNPV (Table S5).

For AcMNPV, most of the 65 (38+11+1+15, see Table 1) homologue groups (covering 69 AcMNPV ORFs) found at least in all the alphabaculoviruses and betabaculoviruses are essential/important for BV, ODV and OB production and infectivity, with the exception of the 2 dispensable protein homologue groups of P24 (AC129) and PEP (AC131) (Table 1 and Table S5). Apart from the 65 homologue groups above, 9 (4+5, see Table 1) homologue groups (covering 9 AcMNPV ORFs) were found at least in all the alphabaculoviruses, among which, VP80 (AC104), AC34, EXON0 (AC141) and P10 (AC137) are essential/important for BV, ODV and OB, while EGT (AC15), AC18, AC19, AC29 and AC55 are dispensable proteins for virus infection. Furthermore, 73 (47+25+1, see Table 1) homologue groups (covering the 78 AcMNPV ORFs) are not conserved in the alphabaculoviruses. Among the 73 homologue groups, 6 homologue groups including PKIP (AC24), BJDP (AC51), AC69, AC73, GP64 (AC128), AC132 are essential for BV and ODV production (Table 1 and Table S5). The 9 homologue groups including PTP (AC1), BRO (AC2), AC11, ARIF-1 (AC20/AC21), AC52, AC79, CG30 (AC88)/PE38 (AC153), P35 (AC135), IE2 (AC151) and AC152, are important for BV and ODV production (Table 1 and Table S5). The AC5 and AC43 are important for OB formation, while V-Chi (AC126) and V-CATH (AC127) are important for host liquefaction to facilitate OB release. Nevertheless, the four homologue groups and the remaining 54 of the 73 homologue groups are not dispensable for BV and ODV production. It was noted that for the proteins essential or important for virion infection and production, nearly all the proteins had demonstrated their functional roles in infection process. Nevertheless, for the ODV-E18 (McCarthy and Theilmann, 2008) and the AC106/107 (Chen *et al*., 2021), no investigation had been performed to reveal their detailed functional roles in the processes of baculoviral biphasic infection cycle.

Integrated baculovirus-host interaction network

To gain a global perspective on how a baculovirus assembles its progeny virions and interfaces with its host, several researches focused on the exploration of interactions among virion structural proteins and host proteins (Braunagel and Summers, 2007; Peng *et al*., 2010; Yue *et al*., 2018; Zhang *et al*., 2018a). For a comprehensive view of baculovirus-host interaction network, a literature exploration based on functional genomic studies of baculoviruses was performed, supplying a list of 156 viral protein interactions (Table S2A), 12 viral protein-DNA interactions (Table S2B) and 72 virus-host protein interactions (Table S2C). With the exception of 24 self-interactions of viral proteins, a baculovirus-host interaction network was illustrated in Fig. 2, comprising of 98 nodes (including 26 host proteins nodes) and 214 edges (interactions).

In the interaction network, proteins including AC76 (Hu *et al*., 2010), AC93 (Yuan *et al*., 2011) and P48 (AC103) (Wang *et al*., 2019b) are required for virus-induced intranuclear microvesicle formation, and interact with multiple host proteins involved in the ESCRT (endosomal complexes required for transport) pathway. These viral proteins interact with each other and other viral proteins including AC11 (Tao *et al*., 2015), AC78 (Li *et al*., 2014), GP41 (AC80) (Li *et al*., 2018), ODV-EC43 (AC109) (Lin *et al*., 2009), 49K (AC142) (McCarthy *et al*., 2008) and AC146 (Dickison *et al*., 2012), (Fig. 2). All of the viral proteins above are essential for BV production and ODV envelopment.

FP25K interacts with BV major envelope protein GP64 (Zhang *et al*., 2018a) while ODV-E25 interacts with BV protein ME53 (Zhang *et al*., 2018a) (Fig. 2). Both of the two proteins interact with nucleocapsid proteins (Zhang *et al*., 2018a) and ODV major envelope protein ODV-E66 (Braunagel *et al*., 2013). FP25K (Braunagel *et al*., 1999; Li *et al*., 2015) and ODV-E25 (Chen *et al*., 2012) are important for BV infectivity and ODV formation, implicating their capability of regulation of the BV/ODV formation mechanism. Nevertheless, the two proteins are not essential for BV and ODV production (Braunagel *et al*., 1999; Chen *et al*., 2012; Li *et al*., 2015). The ODV-E18 interacts not only with the FP25K and ODV-E25, but also with BV proteins GP64 and ME53, multiple PIFs and ODV-E66, nucleocaspid proteins and P48 (AC103) (Fig. 2). It seems that the ODV-E18

Table 1. Overview of the conservation and functions of AcMNPV ORFs

No.[#]	*Alpha-*	*Beta-*	*Gamma-*	*Delta-*	ORFs	Function annotation[b]
38	++	++	++	++	PIF0 (AC138), PIF1 (AC119), PIF2 (AC22), PIF3 (AC115), PIF4 (AC96), PIF5 (AC148), PIF6 (AC68), PIF7 (AC110)	Essential for *per os* infection
					PIF8 (AC83), LEF1 (AC14), LEF2 (AC6), LEF4 (AC90), LEF5 (AC99), LEF8 (AC50), LEF9 (AC62), P47 (AC40), AC53, VP1054 (AC54), DNA POL (AC65), Desmoplakin (AC66), VLF-1 (AC77), GP41 (AC80), VP39 (AC89), P33 (AC92), P18 (AC93), Helicase (AC95), 38K (AC98), P6.9 (AC100), ODV/BV-C42 (AC101), ODV-EC43 (AC109), ALK-EXO (AC133), 49K (AC142), ODV-E18 (AC143), ODV-EC27 (AC144)	Essential for BV and ODV
					AC78, AC81, ODV-E25 (AC94), P48 (AC103)	Important for BV and ODV
11	++	++	++	-	DBP (AC25), LEF11 (AC37), AC75, AC76, AC106/107	Essential for BV and ODV
					FP25K (AC61), IAPs (AC27/AC71)[a]	Important for BV and ODV
					PIF9 (AC108)	Essential for *per os* infection
					AC145/AC150	Important for *per os* infection
					POLH (AC8)	Essential for OB formation
					PEP (AC131)	Dispensable
1	++	++		++	F protein (AC23)	Essential for BV[c]
15	++	++	-	-	P78/83 (AC9), PK1 (AC10), LEF10 (AC53a), LEF3 (AC67), TLP (AC82), P12 (AC102), AC146	Essential for BV and ODV
					AC13, LEF6 (AC28), V-Ubi (AC35), PP31 (AC36), AC38, ME53 (AC139), IE0 (AC147–0)/IE1 (AC147)	Important for BV and ODV
					P24 (AC129)	Dispensable
4	++	+	-	-	EXON0 (AC141)	Important for BV and ODV
					P10 (AC137)	Important for OB release
					EGT (AC15), AC29	Dispensable
5	++	-	-	-	VP80 (AC104)	Essential for BV and ODV
					AC34	Important for BV and ODV
					AC18, AC19, AC55	Dispensable
47	+	-	-	-	PKIP (AC24), BJDP (AC51), AC69, AC73, AC132	Essential for BV and ODV
					AC11, ARIF-1 (AC20/AC21), AC52, IE2 (AC151), AC152	Important for BV and ODV
					AC5, AC43	Important for OB formation
					AC4, AC7, BV/ODV-E26 (AC16), AC17, AC26, AC30, LEF12 (AC41), GTA (AC42), AC44, AC45, AC47, AC48, PCNA (AC49), AC56, AC57, HCF-1 (AC70), AC72, AC74, AC85, AC91, AC97, AC114, AC116, AC117, AC118, AC120, AC121, AC122, PK2 (AC123), AC124, GP16 (AC130), P26 (AC136), AC140, AC149, AC154	Dispensable
25	+	+	-	-	GP64 (AC128)	Essential for BV
					PTP (AC1), BRO (AC2), AC79, CG30 (AC88)/PE38 (AC153), P35 (AC135)[#]	Important for BV and ODV
					V-Chi (AC126), V-CATH (AC127)	Important for host liquefaction
					CTX (AC3), AC12, SOD (AC31), FGF (AC32), HisP (AC33), P43 (AC39), AC46 (ODV-E66), ChaBs (AC58/AC59/AC60), AC63, GP37 (AC64), AC84, PNK/PNL (AC86), HE65 (AC105), AC111, AC112/AC113, LEF7 (AC125), 94K (AC134)	Dispensable
1	+	-	-	++	P15 (AC87)	Dispensable

Note: [#]: No. of homologue groups. ++: found in all the baculoviruses among the genus. +: found in the baculoviruses but not found in all the baculoviruses among the genus. -: not found in any of the baculoviruses among the genus. [a]involvement in antiapoptosis and may be important for BV and ODV. [b]Dispensable: dispensable for BV and ODV production. [c]not essential for AcMNPV due to the presence of GP64.

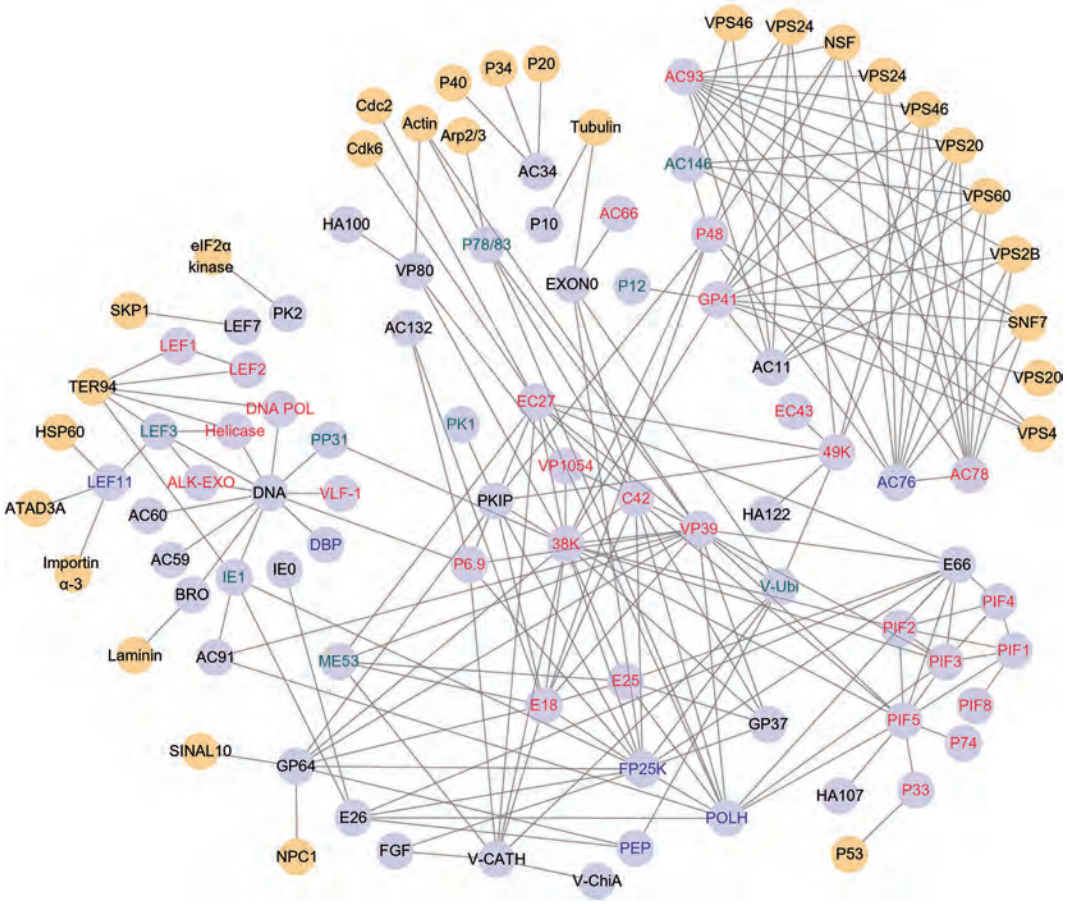

Fig. 2

Network of the baculovirus-host interactions

Proteins conserved in all baculoviruses are indicated in red, while that conserved in all baculoviruses with the exception of the *Deltabaculovirus* and conserved in the *Alphabaculovirus* and *Betabaculovirus* are indicated in blue and darkcyan, respectively. ● virus node, ● host node.

would be the core of viral interaction network. Further, the ODV-E18 is essential for BV production (McCarthy and Theilmann, 2008). Nevertheless, few details on the role of ODV-E18 and its functional domains and sites in viral infection cycle were unveiled.

Potential functional domains and sites of ODV-E18

To facilitate understanding of the function of ODV-E18, analyses of its potential functional domains and sites were performed. Three motifs were identified by MEME against the ODV-E18 sequences of all the 76 baculoviruses, and noted as N-terminal motif, central motif, and C-terminus motif, respectively (Fig. 3). The predicted TM domain and NES were located in the central motif (Fig. 3). The predicted signal peptide was only found in the ODV-E18 proteins from NeabNPV and PrGV, and was found to be totally overlapped with TM domains, while no nuclear localization signal (NLS) was found using SeqNLS. The N-glycosylation sequons (N-X-S/T) were found in five regions among the aligned ODV-E18 sequences (Fig. 3), and noted as NG1-NG5 in Fig. 2. Most of the ODV-E18 proteins were predicted to be N-glycosylated at the Asparagine (N) residues located in NG3 and NG5 regions. Several phosphorylation sites were predicted in each ODV-E18 protein, and nearly all the ODV-E18 proteins shared three region/sites (PS1-PS3 in Fig. 3) that would be phosphorylated.

Discussion

In combination of all-versus-all BLAST search, genome reannotation and literature exploration, this study supplied the comprehensive identification of 992 protein homologue groups, and updated the view of protein conservation among baculoviral genomes with 25 homologue

groups that include the 56 newly identified proteins from reannotated genomes. This would be used as a checklist for future annotation of increasing sequenced genomes and baculoviral comparative genomics. This study also supplied a comprehensive literature view of protein functions, and proposed research targets for future functional investigations, including the two proteins AC106/107, ODV-E18, and potential functional domains and post-translational sites of ODV-E18.

Most of the 992 protein homologue groups are distributed in each baculoviral genome as single copy. Nevertheless, a few proteins are found to be multigene family proteins, such as BROs (baculoviral repeat ORFs), ChaBs, IAPs (inhibitors of apoptosis), AC145/AC150 homologue groups. Positive synergy effects of genes, such as ac145 and ac150 (important for *per os* infection) (Lapointe *et al*., 2004), and *ie1* and *ie-0* genes (Lu *et al*., 2005; Stewart *et al*., 2005), have been noted. It has been found that proteins in the same homologue group or with functional similarity may function with positive synergy effects and thus be beneficial for virus infection, such as AC145 and AC150 (Lapointe *et al*., 2004), both of which were noted as "important for *per os* infection" here. It also has been noted that the *iap* genes, which belong to a large gene family with eukaryote members (Kuzio *et al*., 1999), would function in mutual complementation, and result in a misconception that the genes may be not essential for BV and ODV production during deletion of each of the

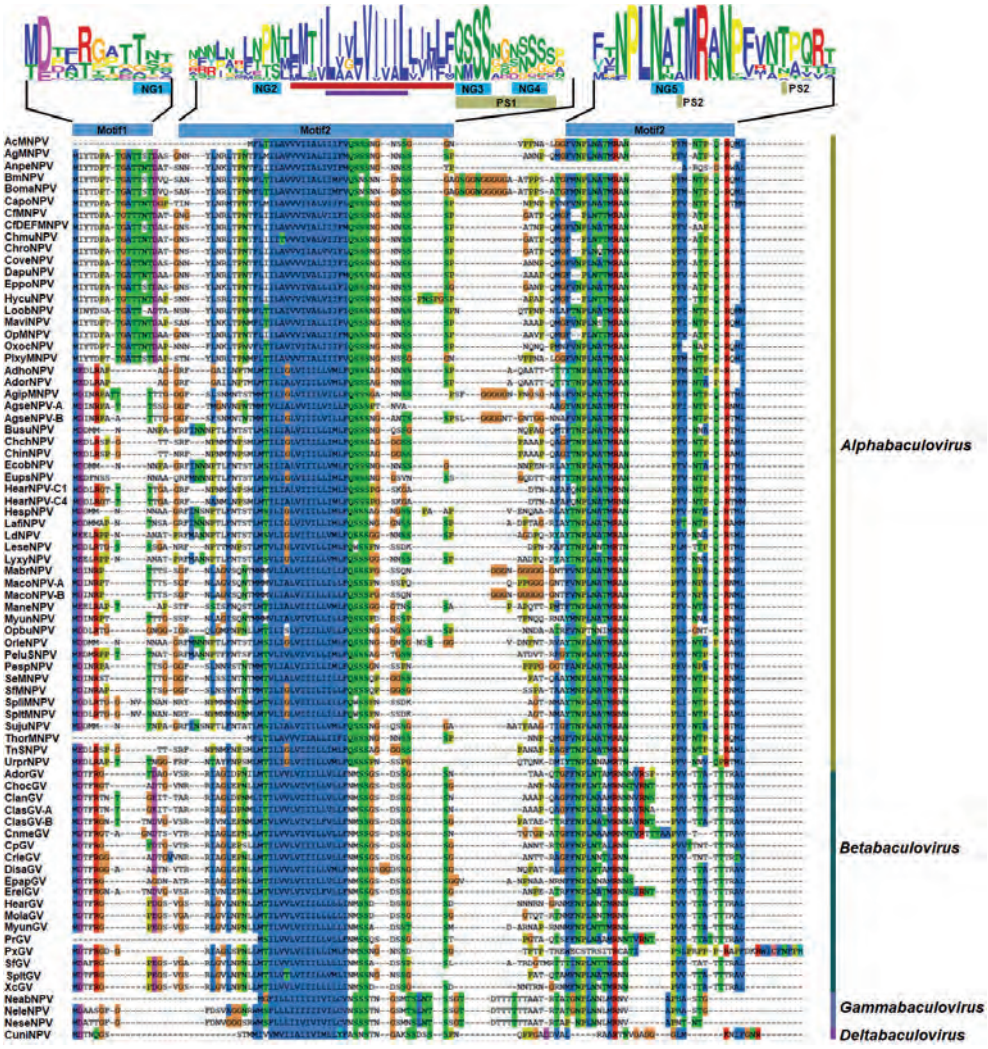

Fig. 3

Analysis of functional domains and posttranslational modification sites of ODV-E18

The transmembrane (TM) domain is indicated as red horizontal bar, while the nuclear localization signal (NLS) domain is indicated as red horizontal bar. PS: indicates phosphorylation sites, NG: indicates N-glycosylation sites.

individuals. The IAP homologues (AC27 and AC71) and P35 are involved in antiapoptosis, assuring viral normal replication since deletions of individual IAP, two IAPs or combination of one IAP and P35 did not result in deficient AcMNPV replication in permissive cells (Griffiths *et al*., 1999). Here we noted all the IAPs and P35 as "important for BV and ODV" for an awareness during construction minimum AcMNPV genome.

The virus-host network components (Fig. 2) would work together to facilitate accomplishment of viral infection cycle. The interactions among *per os* infectivity factors (PIFs) including P74 (PIF0), PIF1–5, PIF8 function in formation and/or assembly of PIF complex (Table S5) and thus would facilitate the interaction of PIF complex with host receptor(s) for mediating ODV entry into host midgut cells. The interactions among nucleocapsid proteins, ODV envelop proteins and DNA interaction proteins (Fig. 2) would facilitate virion assembly and stability. Multiple viral proteins essential for viral-induced intranuclear microvesicle formation and the egress of BV are involved in interactions with the host proteins in ESCRT pathway (Yue *et al*., 2018). The ESCRT pathway has been found to be essential for membrane deformation (Hurley, 2015), entry and release of many enveloped viruses including AcMNPV (Votteler and Sundquist, 2013; Yue *et al*., 2018). Taking protein conservation in to consideration, the summarized virus-host network would be shared by most of the baculoviruses to accomplish viral infection cycle.

Due to the correlation between protein conservation and functional importance, highly conserved proteins have attracted much attention on their functional roles in the baculoviral infection cycle (Garavaglia *et al*., 2012; van Oers and Vlak, 2007). Here, a comprehensive collection of literature on the investigation of baculoviral genes using systematical (Chen *et al*., 2021; Ono *et al*., 2012) and individual gene knockout supplied an updated encyclopedia of genes of the reference baculovirus, AcMNPV (David *et al*., 2009) (Table S5). All the 156 AcMNPV ORFs (and their homologues) were investigated using knockout analysis. Functions of 145 ORFs have been supported by at least two referred papers using knock-out analysis of each gene. This supplies a rapid and global view for further construction of BV minigenome by deleting non-essential/dispensable genes for BV, in spite of the highly conserved genes specifically essential or important for ODV infection (Chen *et al*., 2021), such as multiple PIFs and Polyhedrin (POLH). We also anticipate future construction of the baculovirus containing a minigenome that carries minimum genetic information capable of supporting the baculoviral biphasic cycle. This would facilitate simulation of the natural evolution of baculoviral genome in laboratory through serial passage of viruses, and thus gain valuable information on gain-and-loss of genes and virus-host interactions.

Furthermore, ODV-E18, as a conserved and essential protein for BV and ODV (McCarthy and Theilmann, 2008), interacts with multiple viral proteins in the virus-host interaction network. Nevertheless, its detailed role in viral infection cycle has not been revealed, likewise the AC106/107 which is also essential protein for BV and ODV (Chen *et al*., 2021). Further investigations of posttranslational modifications (Fig. 3) of ODV-E18 also supply potential research targets for further functional studies of ODV-E18. It had been demonstrated (Hou *et al*., 2013) that the ODV-E18 on HearNPV BV virions were *N*-glycosylated at the N64 site in the N-A-T sequon corresponding to the N5 region (Fig. 3), while the ODV-E18 on HearNPV ODV virions were phosphorylated at the T75 and T79 sites in the NTPQRTMM sequon corresponding to the PS3 (Fig. 3). It is anticipated that the further investigations of AC106/107 and both of *N*-glycosylation and phosphorylation of ODV-E18 would supply more insights into their functional roles in the processes of viral biphasic infection cycle.

Towards construction of a minimal and functional baculoviral expression vector supporting maximum expression of functional proteins and protein complexes (Vijayachandran *et al*., 2013), serial knockout of large regions distributed between AcMNPV BV-essential genes can be conducted. However, further laboratory validation to investigate their effects on BV production, such as the regions *ac15-ac23, ac26-ac33, ac41-ac49*, and even the larger regions *ac15-ac33, ac55-ac74* and *ac110-ac138* while keeping essential/important genes (located in the regions) for BV are requiered. It has been suggested that all the *hr* (homologous repeat) regions, which are beneficial for enhanced transcription/expression of genes, should be kept, in spite of their non-essential role in DNA replication and BV production (Carstens and Wu, 2007; Leisy and Rohrmann, 1993; Rodems and Friesen, 1993; Venkaiah *et al*., 2004).

In summary, this study provided a global and integrated view of protein conservation and functional genomic investigations of baculoviruses. It will facilitate further baculoviral genome annotation, understanding baculoviral infection mechanism and future construction of a powerful baculoviral expression vector with a minigenome.

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References

Almagro Armenteros JJ, Tsirigos KD, Sonderby CK, Petersen TN, Winther O, Brunak S, von Heijne G, Nielsen H (2019): SignalP 5.0 improves signal peptide predictions using deep neural networks. Nat. Biotechnol. 37, 420–423. https://doi.org/10.1038/s41587-019-0036-z

Alzohairy AM (2011): BioEdit: An important software for molecular biology. Gerf. Bull. Biosci. 2, 60–61.

Anisimova M, Gil M, Dufayard JF, Dessimoz C, Gascuel O (2011). Survey of branch support methods demonstrates accuracy, power, and robustness of fast likelihood-based approximation schemes. Syst. Biol. 60, 685–699. https://doi.org/10.1093/sysbio/syr041

Bailey TL, Elkan C (1994): Fitting a mixture model by expectation maximization to discover motifs in biopolymers. Proc. Int. Conf. Intell. Syst. Mol. Biol. 2, 28–36.

Berger I, Fitzgerald DJ, Richmond TJ (2004): Baculovirus expression system for heterologous multiprotein complexes. Nat. Biotechnol. 22, 1583–1587. https://doi.org/10.1038/nbt1036

Blom N, Gammeltoft S, Brunak S (1999): Sequence and structure-based prediction of eukaryotic protein phosphorylation sites. J. Mol. Biol. 294, 1351–1362. https://doi.org/10.1006/jmbi.1999.3310

Braunagel SC, Burks JK, Rosas-Acosta G, Harrison RL, Ma H, Summers MD (1999): Mutations within the Autographa californica nucleopolyhedrovirus FP25K gene decrease the accumulation of ODV-E66 and alter its intranuclear transport. J. Virol. 73, 8559–8570. https://doi.org/10.1128/JVI.73.10.8559-8570.1999

Braunagel SC, Summers MD (2007): Molecular biology of the baculovirus occlusion-derived virus envelope. Curr. Drug. Targets 8, 1084–1095. https://doi.org/10.2174/138945007782151315

Carstens EB, Wu Y (2007): No single homologous repeat region is essential for DNA replication of the baculovirus Autographa californica multiple nucleopolyhedrovirus. J. Gen. Virol. 88, 114–122. https://doi.org/10.1099/vir.0.82384-0

Chen C, Chen H, Zhang Y, Thomas HR, Frank MH, He Y, Xia R (2020): TBtools: An integrative toolkit developed for interactive analyses of big biological data. Mol. Plant. 13, 1194–1202. https://doi.org/10.1016/j.molp.2020.06.009

Chen L, Hu X, Xiang X, Yu S, Yang R, Wu X (2012): Autographa californica multiple nucleopolyhedrovirus odv-e25 (Ac94) is required for budded virus infectivity and occlusion-derived virus formation. Arch. Virol. 157, 617–625. https://doi.org/10.1007/s00705-011-1211-9

Chen T, Duan X, Hu H, Shang Y, Hu Y, Deng F, Wang H, Wang M, Hu Z (2021): Systematic analysis of 42 Autographa californica multiple nucleopolyhedrovirus genes identifies an additional six genes involved in the production of infectious budded virus. Virol. Sin. 36, 762–773. https://doi.org/10.1007/s12250-021-00355-1

Cohen DPA, Martin M, Davies BG, Vlak JM, van Oers MM (2009): Encyclopedia of Autographa californica nucleopolyhedrovirus genes. Virol. Sin. 24, 359–414. https://doi.org/10.1007/s12250-009-3059-7

De Bie T, Cristianini N, Demuth JP, Hahn MW (2006): CAFE: a computational tool for the study of gene family evolution. Bioinformatics 22, 1269–1271. https://doi.org/10.1093/bioinformatics/btl097

Dickison VL, Willis LG, Sokal NR, Theilmann DA (2012): Deletion of AcMNPV ac146 eliminates the production of budded virus. Virology 431, 29–39. https://doi.org/10.1016/j.virol.2012.05.002

Emms DM, Kelly S (2019): OrthoFinder: phylogenetic orthology inference for comparative genomics. Genome Biol. 20, 238. https://doi.org/10.1186/s13059-019-1832-y

Garavaglia MJ, Miele SA, Iserte JA, Belaich MN, Ghiringhelli PD (2012): The ac53, ac78, ac101, and ac103 genes are newly discovered core genes in the family Baculoviridae. J. Virol. 86, 12069–12079. https://doi.org/10.1128/JVI.01873-12

Griffiths CM, Barnett AL, Ayres MD, Windass J, King LA, Possee RD (1999): In vitro host range of Autographa californica nucleopolyhedrovirus recombinants lacking functional p35, iap1 or iap2. J. Gen. Virol. 80, 1055–1066. https://doi.org/10.1099/0022-1317-80-4-1055

Harrison RL, Herniou EA, Jehle JA, Theilmann DA, Burand JP, Becnel JJ, Krell PJ, van Oers MM, Mowery JD, Bauchan GR (2018a): ICTV Virus Taxonomy Profile: Baculoviridae. J. Gen. Virol. 99, 1185–1186. https://doi.org/10.1099/jgv.0.001107

Harrison RL, Mowery JD, Rowley DL, Bauchan GR, Theilmann DA, Rohrmann GF, and Erlandson MA (2018b): The complete genome sequence of a third distinct baculovirus isolated from the true armyworm, Mythimna unipuncta, contains two copies of the lef-7 gene. Virus Genes 54, 297–310. https://doi.org/10.1007/s11262-017-1525-0

Harrison RL, Rowley DL, Mowery JD, Bauchan GR, Burand JP (2017): The Operophtera brumata nucleopolyhedrovirus (OpbuNPV) represents an early, divergent lineage within genus Alphabaculovirus. Viruses 9, 307. https://doi.org/10.3390/v9100307

Hayakawa T, Ko R, Okano K, Seong SI, Goto C, Maeda S (1999): Sequence analysis of the Xestia c-nigrum granulovirus genome. Virology 262, 277–297. https://doi.org/10.1006/viro.1999.9894

Herniou EA, and Jehle JA (2007): Baculovirus phylogeny and evolution. Curr. Drug. Targets 8, 1043–1050. https://doi.org/10.2174/138945007782151306

Hitchman RB, Locanto E, Possee RD, King LA (2011): Optimizing the baculovirus expression vector system. Methods 55, 52–57. https://doi.org/10.1016/j.ymeth.2011.06.011

Hou D, Zhang L, Deng F, Fang W, Wang R, Liu X, Guo L, Rayner S, Chen X, Wang H, Hu Z (2013): Comparative proteomics reveal fundamental structural and functional differences between the two progeny phenotypes of a baculovirus. J. Virol. 87, 829–839. https://doi.org/10.1128/JVI.02329-12

Hu Z, Yuan M, Wu W, Liu C, Yang K, Pang Y (2010): Autographa californica multiple nucleopolyhedrovirus ac76

is involved in intranuclear microvesicle formation. J. Virol. 84, 7437–7447. https://doi.org/10.1128/JVI.02103-09

Hurley JH (2015): ESCRTs are everywhere. Embo. J. 34, 2398–2407. https://doi.org/10.15252/embj.201592484

Javed MA, Biswas S, Willis LG, Harris S, Pritchard C, van Oers MM, Donly BC, Erlandson MA, Hegedus DD, Theilmann DA (2017): Autographa californica multiple nucleopolyhedrovirus AC83 is a per os infectivity factor (PIF) protein required for occlusion-derived virus (ODV) and budded virus nucleocapsid assembly as well as assembly of the PIF complex in ODV envelopes. J. Virol. 91, 02115–16. https://doi.org/10.1128/JVI.02115-16

Kalyaanamoorthy S, Minh BQ, Wong TKF, von Haeseler A, Jermiin LS (2017): ModelFinder: fast model selection for accurate phylogenetic estimates. Nat. Methods 14, 587–589. https://doi.org/10.1038/nmeth.4285

Krogh A, Larsson B, von Heijne G, Sonnhammer EL (2001): Predicting transmembrane protein topology with a hidden Markov model: application to complete genomes. J. Mol. Biol. 305, 567–580. https://doi.org/10.1006/jmbi.2000.4315

Kumar S, Stecher G, Li M, Knyaz C, Tamura K (2018): MEGA X: Molecular Evolutionary Genetics Analysis across computing platforms. Mol. Biol. Evol. 35, 1547–1549. https://doi.org/10.1093/molbev/msy096

Kuzio J, Pearson MN, Harwood SH, Funk CJ, Evans JT, Slavicek JM, Rohrmann GF (1999): Sequence and analysis of the genome of a baculovirus pathogenic for Lymantria dispar. Virology 253, 17–34. https://doi.org/10.1006/viro.1998.9469

la Cour T, Kiemer L, Molgaard A, Gupta R, Skriver K, Brunak S (2004): Analysis and prediction of leucine-rich nuclear export signals. Protein Eng. Des. Sel. 17, 527–536. https://doi.org/10.1093/protein/gzh062

Lapointe R, Popham HJ, Straschil U, Goulding D, O'Reilly DR, Olszewski JA (2004): Characterization of two Autographa californica nucleopolyhedrovirus proteins, Ac145 and Ac150, which affect oral infectivity in a host-dependent manner. J. Virol. 78, 6439–6448. https://doi.org/10.1128/JVI.78.12.6439-6448.2004

Lauzon HA, Lucarotti CJ, Krell PJ, Feng Q, Retnakaran A, Arif BM (2004): Sequence and organization of the Neodiprion lecontei nucleopolyhedrovirus genome. J. Virol. 78, 7023–7035. https://doi.org/10.1128/JVI.78.13.7023-7035.2004

Leisy DJ, Rohrmann GF (1993): Characterization of the replication of plasmids containing hr sequences in baculovirus-infected Spodoptera frugiperda cells. Virology 196, 722–730. https://doi.org/10.1006/viro.1993.1529

Li SF, Wang ML, Shen S, Hu ZH, Wang HL, Deng F (2015): The FP25K acts as a negative factor for the infectivity of AcMNPV budded virus. PLoS One 10, e0128471. https://doi.org/10.1371/journal.pone.0128471

Li SN, Wang JY, Yuan MJ, Yang K (2014): Disruption of the baculovirus core gene ac78 results in decreased production of multiple nucleocapsid-enveloped occlusion-derived virions and the failure of primary infection in vivo. Virus Res. 191, 70–82. https://doi.org/10.1016/j.virusres.2014.07.019

Li YM, Shen S, Hu LB, Deng F, Vlak JM, Hu ZH, Wang HL, Wang ML (2018): The functional oligomeric state of tegument protein GP41 is essential for baculovirus budded virion and occlusion-derived virion assembly. J. Virol. 92, e0154835. https://doi.org/10.1128/JVI.02083-17

Lin JR, Hu JJ (2013): SeqNLS: Nuclear localization signal prediction based on frequent pattern mining and linear motif scoring. PLoS One 8, e76864. https://doi.org/10.1371/journal.pone.0076864

Lin L, Wang J, Deng R, Ke J, Wu H, Wang X (2009): ac109 is required for the nucleocapsid assembly of Autographa californica multiple nucleopolyhedrovirus. Virus Res. 144, 130–135. https://doi.org/10.1016/j.virusres.2009.04.010

Liu TT, Li YY, Qiao B, Jiang YY, Ji N, Li ZF (2020): Disrupting the association of Autographa californica multiple nucleopolyhedrovirus Ac93 with cellular ESCRT-III/Vps4 hinders nuclear egress of nucleocapsids and intranuclear microvesicles formation. Virology 541, 85–100. https://doi.org/10.1016/j.virol.2019.12.003

Lu L, Rivkin H, Chejanovsky N (2005): The immediate-early protein IE0 of the Autographa californica nucleopolyhedrovirus is not essential for viral replication. J. Virol. 79, 10077–10082. https://doi.org/10.1128/JVI.79.18.12122.2005

McCarthy CB, Dai X, Donly C, Theilmann DA (2008): Autographa californica multiple nucleopolyhedrovirus ac142, a core gene that is essential for BV production and ODV envelopment. Virology 372, 325–339. https://doi.org/10.1016/j.virol.2007.10.019

McCarthy CB, Theilmann DA (2008): AcMNPV ac143 (odv-e18) is essential for mediating budded virus production and is the 30th baculovirus core gene. Virology 375, 277–291. https://doi.org/10.1016/j.virol.2008.01.039

McGinnis S, Madden TL (2004): BLAST: at the core of a powerful and diverse set of sequence analysis tools. Nucleic Acids Res. 32, 20–25. https://doi.org/10.1093/nar/gkh435

Mello B (2018): Estimating TimeTrees with MEGA and the TimeTree resource. Mol. Biol. Evol. 35, 2334–2342. https://doi.org/10.1093/molbev/msy133

Minh BQ, Schmidt HA, Chernomor O, Schrempf D, Woodhams MD, von Haeseler A, Lanfear R (2020): IQ-TREE 2: New models and efficient methods for phylogenetic inference in the genomic era. Mol. Biol. Evol. 37, 1530–1534. https://doi.org/10.1093/molbev/msaa015

Nakamura T, Yamada KD, Tomii K, Katoh K (2018): Parallelization of MAFFT for large-scale multiple sequence alignments. Bioinformatics 34, 2490–2492. https://doi.org/10.1093/bioinformatics/bty121

Ono C, Kamagata T, Taka H, Sahara K, Asano S, Bando H (2012): Phenotypic grouping of 141 BmNPVs lacking viral gene sequences. Virus Res. 165, 197–206. https://doi.org/10.1016/j.virusres.2012.02.016

Palmberger D, Wilson IB, Berger I, Grabherr R, Rendic D (2012): SweetBac: a new approach for the production of mammalianised glycoproteins in insect cells. PLoS One 7, e34226. https://doi.org/10.1371/journal.pone.0034226

Peng K, Wu M, Deng F, Song J, Dong C, Wang H, Hu Z (2010): Identification of protein-protein interactions of the occlusion-derived virus-associated proteins of Helicoverpa armigera nucleopolyhedrovirus. J. Gen. Virol. 91, 659–670. https://doi.org/10.1099/vir.0.017103-0

Rodems SM, Friesen PD (1993): The hr5 transcriptional enhancer stimulates early expression from the Autographa californica nuclear polyhedrosis virus genome but is not required for virus replication. J. Virol. 67, 5776–5785. https://doi.org/10.1128/jvi.67.10.5776-5785.1993

Santos ER, Oliveira LB, Peterson L, Sosa-Gomez DR, Ribeiro BM, Ardisson-Araujo DMP (2018): The complete genome sequence of the first hesperiid-infecting alphabaculovirus isolated from the leguminous pest Urbanus proteus (Lepidoptera: Hesperiidae). Virus Res. 249, 76–84. https://doi.org/10.1016/j.virusres.2018.03.009

Shannon P, Markiel A, Ozier O, Baliga NS, Wang JT, Ramage D, Amin N, Schwikowski B, Ideker T (2003): Cytoscape: a software environment for integrated models of biomolecular interaction networks. Genome Res. 13, 2498–2504. https://doi.org/10.1101/gr.1239303

Slack J, Arif BM (2007): The baculoviruses occlusion-derived virus: virion structure and function. Adv. Virus Res. 69, 99–165. https://doi.org/10.1016/S0065-3527(06)69003-9

Stewart TM, Huijskens I, Willis LG, Theilmann DA (2005): The Autographa californica multiple nucleopolyhedrovirus ie0-ie1 gene complex is essential for wild-type virus replication, but either IE0 or IE1 can support virus growth. J. Virol. 79, 4619–4629. https://doi.org/10.1128/JVI.79.8.4619-4629.2005

Talavera G, Castresana J (2007): Improvement of phylogenies after removing divergent and ambiguously aligned blocks from protein sequence alignments. Syst. Biol. 56, 564–577. https://doi.org/10.1080/10635150701472164

Tamura K, Battistuzzi FU, Billing-Ross P, Murillo O, Filipski A, Kumar S (2012): Estimating divergence times in large molecular phylogenies. Proc. Natl. Acad. Sci. U. S. A. 109, 19333–19338. https://doi.org/10.1073/pnas.1213199109

Tao XY, Choi JY, Kim WJ, An SB, Liu Q, Kim SE, Lee SH, Kim JH, Woo SD, Jin BR, Je YH (2015): Autographa californica multiple nucleopolyhedrovirus ORF11 is essential for budded-virus production and occlusion-derived-virus envelopment. J. Virol. 89, 373–383. https://doi.org/10.1128/JVI.01742-14

Theze J, Bezier A, Periquet G, Drezen JM, Herniou EA (2011): Paleozoic origin of insect large dsDNA viruses. Proc. Natl. Acad. Sci. U. S. A. 108, 15931–15935. https://doi.org/10.1073/pnas.1105580108

van Oers MM, Vlak JM (2007): Baculovirus genomics. Curr. Drug. Targets 8, 1051–1068. https://doi.org/10.2174/138945007782151333

Vanarsdall AL, Mikhailov VS, Rohrmann GF (2007): Baculovirus DNA replication and processing. Curr. Drug. Targets 8, 1096–1102. https://doi.org/10.2174/138945007782151397

Venkaiah B, Viswanathan P, Habib S, Hasnain SE (2004): An additional copy of the homologous region (hr1) sequence in the Autographa californica multinucleocapsid polyhedrosis virus genome promotes hyperexpression of foreign genes. Biochemistry 43, 8143–8151. https://doi.org/10.1021/bi049953q

Vijayachandran LS, Thimiri Govinda Raj DB, Edelweiss E, Gupta K, Maier J, Gordeliy V, Fitzgerald DJ, Berger I (2013): Gene gymnastics: Synthetic biology for baculovirus expression vector system engineering. Bioengineered 4, 279–287. https://doi.org/10.4161/bioe.22966

Volkman LE (2007): Baculovirus infectivity and the actin cytoskeleton. Curr. Drug. Targets 8, 1075–1083. https://doi.org/10.2174/138945007782151379

Votteler J, Sundquist WI (2013): Virus budding and the ESCRT pathway. Cell Host & Microbe 14, 232–241. https://doi.org/10.1016/j.chom.2013.08.012

Wang X, Shang Y, Chen C, Liu S, Chang M, Zhang N, Hu H, Zhang F, Zhang T, Wang Z, Liu X, Lin Z, Deng F, Wang H, Zou Z, Vlak JM, Wang M, Hu Z (2019a): Baculovirus per os infectivity factor complex: components and assembly. J. Virol. 93, e02053–18. https://doi.org/10.1128/JVI.02053-18

Wang Y, Cai QY, Chen JN, Huang ZH, Wu WB, Yuan MJ, Yang K (2019b): Autographa californica multiple nucleopolyhedrovirus P48 (Ac103) is required for the efficient formation of virus-induced intranuclear microvesicles. Virol. Sin. 34, 712–721. https://doi.org/10.1007/s12250-019-00147-8

Yuan M, Huang Z, Wei D, Hu Z, Yang K, Pang Y (2011): Identification of Autographa californica nucleopolyhedrovirus ac93 as a core gene and its requirement for intranuclear microvesicle formation and nuclear egress of nucleocapsids. J. Virol. 85, 11664–11674. https://doi.org/10.1128/JVI.05275-11

Yue Q, Yu Q, Yang Q, Xu Y, Guo Y, Blissard GW, Li Z (2018): Distinct roles of cellular ESCRT-I and ESCRT-III proteins in efficient entry and egress of budded virions of Autographa californica multiple nucleopolyhedrovirus. J. Virol. 92, e01636–17. https://doi.org/10.1128/JVI.01636-17

Zhang D, Gao F, Jakovlić I, Zou H, Zhang J, Li WX, Wang GT (2020): PhyloSuite: An integrated and scalable desktop platform for streamlined molecular sequence data management and evolutionary phylogenetics studies. Mol. Ecol. Resour. 20, 348–355. https://doi.org/10.1111/1755-0998.13096

Zhang JJ, Feng M, Fan Y, Xu WF, Zheng Q, Wu XF (2018a): Networks of protein-protein interactions among structural proteins of budded virus of Bombyx mori nucleopolyhedrovirus. Virology 518, 163–171. https://doi.org/10.1016/j.virol.2018.02.015

Zhang Y, Hu X, Mu J, Hu Y, Zhou Y, Zhao H, Wu C, Pei R, Chen J, Chen X, Wang Y (2018b): Ac102 participates in nuclear actin polymerization by modulating BV/ODV-C42 ubiquitination during Autographa californica

multiple nucleopolyhedrovirus infection. J. Virol. 92, e00005–18. https://doi.org/10.1128/JVI.00005-18

Zhu Z, Wang J, Wang Q, Yin F, Liu X, Hou D, Zhang L, Liu H, Li J, Arif BM, Wang H, Deng F, Hu Z, Wang M (2018): Genome characteristics of the Cyclophragma undans nucleopolyhedrovirus: A distinct species in group I of Alphabaculovirus. Virol. Sin. 33, 359–368. https://doi.org/10.1007/s12250-018-0047-9

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SUPPLEMENTARY INFORMATION

An integrated view of protein homologue groups and functional genomic development of baculoviruses: towards understanding baculoviral infection mechanism and improving baculoviral expression vector

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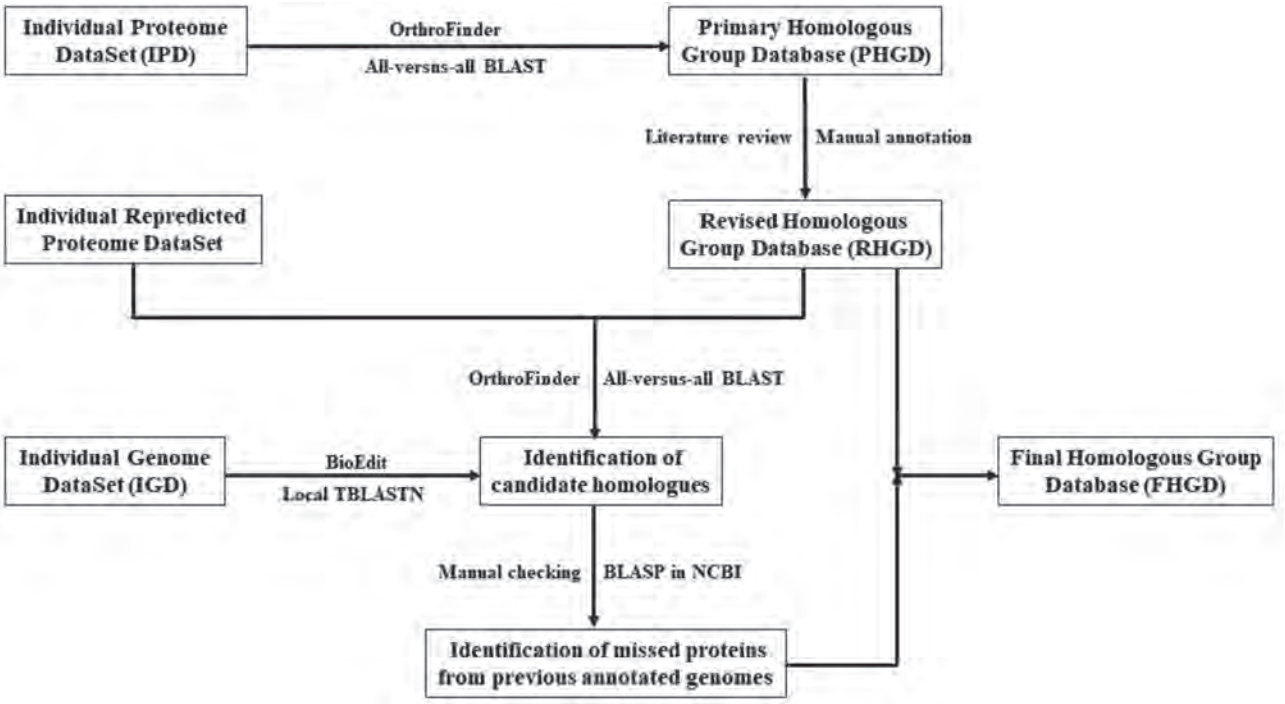

Fig. S1

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Table S1. Overview of 76 baculoviral genomes used in this study

Virus name	Abbreviation	Genbank accession	Length (bp)	G+C (%)	No. of ORFs	Reference[b]
Alphabaculovirus 43						
Antheraea pernyi NPV	AnpeNPV	NC_008035.3/DQ486030.3	126,629	53.4	147	(Nie *et al.*, 2007)
Anticarsia gemmatalis MNPV	AgMNPV	NC_031761.1/KR815466.1	131,855	44.5	156	(Brito *et al.*, 2015)
Autographa californica MNPV	AcMNPV	NC_001623.1/L22858.1	133,894	40.7	156	(Ayres *et al.*, 1994)
Bomby xmori NPV	BmNPV	NC_001962.1/L33180.1	128,413	40.4	143	(Gomi *et al.*, 1999)
Bombyx mandarina NPV	BomaNPV	FJ882854.1	126,770	40.2	141	(Xu *et al.*, 2010)
Catopsilia Pomona NPV	CapoNPV	NC_030240.1/ KU565883.1	128,058	39.7	130	(Wang *et al.*, 2016)
Choristoneura fumiferana MNPV	CfMNPV	NC_004778.3/ AF512031.3	129,593	50.1	146	(de Jong *et al.*, 2005)
Choristoneura fumiferana DEFMNPV	CfDEFMNPV	NC_005137.2/ AY327402.2	131,160	45.8	149	(Lauzon *et al.*, 2005)
Choristoneura murinana NPV	ChmuNPV	NC_023177.1/ KF894742.1	124689	50.0	147	(Rohrmann *et al.*, 2014)

Choristoneura rosaceana NPV	ChroNPV	NC_021924.1/KC961304.1	129,052	48.6	149	(Thumbi *et al.*, 2013)
Condylorrhiza vestigialis MNPV	CoveNPV	NC_026430.1/ KJ631623.1	125,767	42.9	138	(Castro *et al.*, 2017)
Dasychira pudibunda NPV	DapuNPV	KP747440.1	136,761	54.4	161	(Krejmer *et al.*, 2015)
Epiphyas postivittana NPV	EppoNPV	NC_003083.1/ AY043265.1	118,584	40.7	136	(Hyink *et al.*, 2002)
Hyphantria cunea NPV	HycuNPV	NC_007767.1/ AP009046.1	132,959	45.1	148	(Ikeda *et al.*, 2006)
Lonomia oblique MNPV	LoobMNPV	NC_043520.1/KP763670.1	120,022	35.7	134	(Aragao-Silva *et al.*, 2016)
Maruca vitrata NPV	MaviNPV	NC_008725.1/ EF125867.1	111,953	38.6	126	(Chen *et al.*, 2008)
Orgyia pseudotsugata MNPV	OpMNPV	NC_001875.2/ U75930.2	131,990	55.1	152	(Ahrens *et al.*, 1997)
Oxyplax ochracea NPV	OxocNPV	NC_043529.1/MF143631.1	113.97	31.2	124	(Wang *et al.*, 2018)
Plutella xylostella MNPV	PlxyMNPV	DQ457003.1	134,417	40.7	153	(Harrison and Lynn, 2007)
Thysanoplusia orichalcea MNPV	ThorMNPV	NC_019945.1/ JX467702.1	132,978	37.9	145	(Wang *et al.*, 2012)
Adoxophyes honmai NPV	AdhoNPV	NC_004690.1/AP006270	113,220	35.6	125	(Nakai *et al.*, 2003)
Adoxophyes orana NPV	AdorNPV	NC_011423.1/ EU591746.1	111,724	35	121	(Hilton and Winstanley, 2008)

Agrotis ipsilon MNPV	AgipMNPV	NC_011345.1/EU839994.1	155,122	48.6	163	(Harrison, 2009)
Agrotis segetum NPV-A	AgseNPV-A	NC_007921.1/DQ123841.1	147,544	45.7	153	(Jakubowska *et al.*, 2006)
Agrotis segetum NPV-B	AgseNPV-B	NC_025960.1/KM102981.1	148.981	45.7	150	(Wennmann *et al.*, 2015)
Buzura suppressaria NPV	BusuNPV	NC_023442.1/ KF611977.1	120,420	36.8	127	(Zhu *et al.*, 2014)
Chrysodeixis chalcites SNPV	ChchNPV	NC_007151.1/ AY864330.1	149,622	39.1	151	(van Oers *et al.*, 2005)
Chrysodeixis includens NPV	ChinNPV	NC_026268.1/KJ631622.1	139,132	39.3	141	(Craveiro *et al.*, 2015)
Ectropis obliqua NPV	EcobNPV	NC_008586.1/ DQ837165.1	131,204	37.6	126	(Ma *et al.*, 2007)
Euproctis pseudoconspersa NPV	EupsNPV	NC_012639.1/ FJ227128.1	141,291	40.4	139	(Tang *et al.*, 2009)
Helicoverpa armigera SNPV-G4	HearNPV-G4	NC_002654.2/AF271059.2	131,405	39.1	135	(Chen *et al.*, 2001)
Helicoverpa armigera SNPV-C1	HearNPV-C1	NC_003094.2/AF303045.2	130,759	38.9	137	(Zhang *et al.*, 2005)
Hemileuca sp. NPV	HespNPV	NC_021923.1/ KF158713.1	140,633	38.1	137	(Rohrmann *et al.*, 2013)
Lambdina fiscellaria NPV	LafiNPV	NC_026922.1/ KP752043.1	157,989	43.7	137	(Rohrmann *et al.*, 2015b)
Leucania separata NPV	LeseNPV	NC_008348.1/ AY394490.1	168,041	48.6	169	(Xiao and Qi, 2007)

Lymantria dispar MNPV	LdMNPV	NC_001973.1/ AF081810.1	161,046	57.5	164	(Kuzio *et al.*, 1999)
Lymantria xylina MNPV	LyxyMNPV	NC_013953.1/GQ202541.1	156,344	53.4	157	(Nai *et al.*, 2010)
Malacosoma neustria NPV	ManeNPV	NC_040606.1/KY968317.1	130.2	38.2	131	(Gencer *et al.*, 2018)
Mamestra brassicae MNPV	MabrMNPV	NC_023681.1/ JQ798165.1	152,710	39.8	158	(Choi *et al.*, 2013)
Mamestra configurata NPV-A	MacoNPV-A	NC_003529.1/U59461.2	155,060	41.7	169	(Li *et al.*, 2002b)
Mamestra configurata NPV-B	MacoNPV-B	NC_004117.1/ AY126275.1	158,482	40.4	168	(Li *et al.*, 2002a)
Mythimna unipuncta NPV	MyunNPV	NC_043530.1/MF375894.1	148.48	48.6	158	(Harrison *et al.*, 2018)
Operophtera brumata NPV	OpbuNPV	NC_040621.1/MF614691.1	119.05	39.8	130	(Harrison *et al.*, 2017b)
Orgyia leucostigma NPV	OrleNPV	NC_010276.1/ EU309041.1	156,179	39.9	135	(Thumbi *et al.*, 2011)
Spodoptera exigua MNPV	SeMNPV	NC_002169.1/AF169823.1	135,611	43.8	139	(WF *et al.*, 1999)
Spodoptera frugiperda MNPV	SfMNPV	NC_009011.2/ EF035042.2	131,331	40.2	143	(Harrison *et al.*, 2008)
Spodoptera littoralis MNPV	SpliMNPV	NC_038369.1/JX454574.1	138	44.7	132	(Breitenbach *et al.*, 2013)
Spodoptera litura MNPV	SpltMNPV	NC_003102.1/ AF325155.1	139,342	42.7	141	(Pang *et al.*, 2001)

Perigonia lusca SNPV	PeluSNPV	NC_027923.1/KM596836.1	132,831	39.6	145	(Ardisson-Araujo *et al.*, 2016)
Sucra jujuba NPV	SujuNPV	NC_028636.1/ KJ676450.1	135.95	38.7	131	(Liu *et al.*, 2014)
Peridroma sp. NPV	PespNPV	NC_024625.1/KM009991.1	151,110	53.3	139	(Rohrmann *et al.*, 2015a)
Trichoplusia ni SNPV	TnSNPV	NC_007383.1/DQ017380	134,394	39	145	(Willis *et al.*, 2005)
Urbanus proteus NPV	UrprNPV	NC_029997.2/KR011717.2	105,555	34.7	119	(Santos *et al.*, 2018)
***Betabaculovirus* 19**						
Adoxophyles orona GV	AdorGV	NC_005038.1/ AF547984.1	99,657	34.5	119	(Wormleaton *et al.*, 2003)
Choristoneura occidentalis GV	ChocGV	NC_008168.1/DQ333351.1	104,710	32.7	116	(Escasa *et al.*, 2006)
Clostera anachoreta GV	ClanGV	NC_015398.1/ HQ116624.1	101,487	44.4	123	(Liang *et al.*, 2011)
Clostera anastomosis (L.) GV	ClasGV-A	NC_022646.1/ KC179784.1	101,818	46.7	123	(Liang *et al.*, 2013)
Clostera anastomosis (L.) GV	ClasGV-B	NC_038371.1/KR091910.1	107,439	37.8	123	(Yin *et al.*, 2015)
Cnaphalocrocis medinalis GV	CnmeGV	NC_029304.1/KP658210.1	112,060	35.2	133	(Han *et al.*, 2016)
Cryptophlebia leucotreta GV	CrleGV	NC_005068.1/AY229987.1	110,907	32.4	128	(Lange and Jehle, 2003)

Cydia pomonella GV	CpGV	NC_002816.1/ U53466.2	123,500	45.3	143	(Luque *et al.*, 2001)
Diatraea saccharalis GV	DisaGV	NC_028491.1/ KP296186.1	98.392	34.9	125	(Ardisson-Araujo *et al.*, 2015)
Epinotia aporema GV	EpapGV	NC_018875.1/ JN408834.1	119,082	41.5	133	(Ferrelli *et al.*, 2012)
Erinnyis ello GV	ErelGV	NC_025257.1/ KJ406702.1	102.76	38.7	130	(Ardisson-Araujo *et al.*, 2014)
Helicoverpa armigera GV	HearGV	NC_010240.1/ EU255577.1	169,794	40.8	179	(Harrison and Popham, 2008)
Mocis latipes GV	MolaGV	NC_029996.1/ KR011718.1	134.27	38.3	145	(Ardisson-Araujo *et al.*, 2018)
Mythimna unipuncta GV	MyunGV	NC_033780.2/ KX855660.2	144,673	49.9	153	(Harrison *et al.*, 2017a)
Pieris brassicae GV	PrGV	NC_013797.1/GQ884143.1	108,592	33.2	120	(Zhang *et al.*, 2012)
Plutella xylostella GV	PxGV	NC_002593.1/ AF270937.1	100,999	40.7	120	(Hashimoto *et al.*, 2000)
Spodoptera frugiperda GV	SfGV	NC_026511.1/KM371112.1	140,913	46.2	146	(Cuartas *et al.*, 2015)
Spodoptera litura GV	SpliGV	NC_009503.1/ DQ288858.2	124,121	38.8	136	(Wang *et al.*, 2011)
Xestia c-nigrum GV	XcGV	NC_002331.1/ AF162221.1	178,733	40.7	181	(Hayakawa *et al.*, 1999)
Gammabaculovirus, 3						

Neodiprion abietis NPV	NeabNPV	NC_008252.1/ DQ317692.1	84,264	33.4	93	(Duffy *et al.*, 2006)
Neodiprion lecontei NPV	NeleNPV	NC_005906.1/ AY349019.1	81,755	33.4	89	(Lauzon *et al.*, 2004)
Neodiprion sertifer NPV	NeseNPV	NC_005905.1/ AY430810.1	86,462	33.8	90	(Garcia-Maruniak *et al.*, 2004)
***Deltabaculovirus,* 1**						
Culex nigripalpus NPV	CuniNPV	NC_003084.1/ AF403738.1	108,252	50.9	109	(Afonso *et al.*, 2001)

References

Afonso CL, Tulman ER, Lu Z, Balinsky CA, Moser BA, Becnel JJ, Rock DL, and Kutish GF (2001): Genome sequence of a baculovirus pathogenic for *Culex nigripalpus*. *J. Virol.* **75**, 11157-11565.

Ahrens CH, Russell RL, Funk CJ, Evans JT, Harwood SH, and Rohrmann GF (1997): The sequence of the *Orgyia pseudotsugata* multinucleocapsid nuclear polyhedrosis virus genome. *Virology* **229**, 381-399.

Aragao-Silva CW, Andrade MS, Ardisson-Araujo DMP, Fernandes JEA, Morgado FS, Bao SN, Moraes RHP, Wolff JLC, Melo FL, and Ribeiro BM (2016): The complete genome of a baculovirus isolated from an insect of medical interest: *Lonomia obliqua* (Lepidoptera: Saturniidae). *Sci. Rep.* **6**, 23127.

Ardisson-Araujo DM, de Melo FL, Andrade Mde S, Sihler W, Bao SN, Ribeiro BM, and de Souza ML (2014): Genome sequence of Erinnyis ello granulovirus (ErelGV), a natural cassava hornworm pesticide and the first sequenced sphingid-infecting betabaculovirus. *BMC Genomics* **15**, 856.

Ardisson-Araujo DM, Lima RN, Melo FL, Clem RJ, Huang N, Bao SN, Sosa-Gomez DR, and Ribeiro BM (2016): Genome sequence of *Perigonia lusca* single nucleopolyhedrovirus: insights into the evolution of a nucleotide metabolism enzyme in the family Baculoviridae. *Sci. Rep.* **6**, 24612.

Ardisson-Araujo DM, Melo FL, Clem RJ, Wolff JL, and Ribeiro BM (2015): A betabaculovirus-encoded gp64 homolog codes for a functional envelope fusion protein. *J. Virol.* **90**, 1668-1672.

Ardisson-Araujo DMP, da Silva AMR, Melo FL, Dos Santos ER, Sosa-Gomez DR, and Ribeiro BM (2018): A novel betabaculovirus isolated from the monocot pest *Mocis latipes* (Lepidoptera: Noctuidae) and the evolution of multiple-copy genes. *Viruses* **10**, 134.

Ayres MD, Howard SC, Kuzio J, Lopez-Ferber M, and Possee RD (1994): The complete DNA sequence of *Autographa californica* nuclear polyhedrosis virus. *Virology* **202**, 586-605.

Breitenbach JE, El-Sheikh el SA, Harrison RL, Rowley DL, Sparks ME, Gundersen-Rindal DE, and Popham HJ (2013): Determination and analysis of the genome sequence of *Spodoptera littoralis* multiple nucleopolyhedrovirus. *Virus Res.* **171**, 194-208.

Brito AF, Braconi CT, Weidmann M, Dilcher M, Alves JM, Gruber A, and Zanotto PM (2015): The pangenome of the *Anticarsia gemmatalis* multiple nucleopolyhedrovirus (AgMNPV). *Genome Biol. Evol.* **8**, 94-108.

Castro MEB, Melo FL, Tagliari M, Inglis PW, Craveiro SR, Ribeiro ZMA, Ribeiro BM, and Bao SN (2017): The genome sequence of *Condylorrhiza vestigialis* NPV, a novel baculovirus for the control of the Alamo moth on Populus spp. in Brazil. *J. Invertebr. Pathol.* **148**, 152-161.

Chen X, IJkel WFJ, Tarchini R, Sun X, Sandbrink H, Wang H, Peters S, Zuidema D, Lankhorst RK, Vlak JM, and Hu Z (2001): The sequence of the *Helicoverpa armigera* single nucleocapsid nucleopolyhedrovirus genome. *J. Gen. Virol.* **82**, 241-257.

Chen YR, Wu CY, Lee ST, Wu YJ, Lo CF, Tsai MF, and Wang CH (2008): Genomic and host range studies of *Maruca vitrata* nucleopolyhedrovirus. *J. Gen. Virol.* **89**, 2315-2330.

Choi JB, Heo WI, Shin TY, Bae SM, Kim WJ, Kim JI, Kwon M, Choi JY, Je YH, Jin BR, and Woo SD (2013): Complete genomic sequences and comparative analysis of *Mamestra brassicae* nucleopolyhedrovirus isolated in Korea. *Virus Genes* **47**, 133-151.

Craveiro SR, Inglis PW, Togawa RC, Grynberg P, Melo FL, Ribeiro ZM, Ribeiro BM, Bao SN, and Castro ME (2015): The genome sequence of *Pseudoplusia includens* single nucleopolyhedrovirus and an analysis of p26 gene evolution in the baculoviruses. *BMC Genomics* **16**, 127.

Cuartas PE, Barrera GP, Belaich MN, Barreto E, Ghiringhelli PD, and Villamizar LF (2015): The complete sequence of the first *Spodoptera frugiperda* betabaculovirus genome: a natural multiple recombinant virus. *Viruses* **7**, 394-421.

de Jong JG, Lauzon HA, Dominy C, Poloumienko A, Carstens EB, Arif BM, and Krell PJ (2005): Analysis of the *Choristoneura fumiferana* nucleopolyhedrovirus genome. *J. Gen. Virol.* **86**, 929-943.

Duffy SP, Young AM, Morin B, Lucarotti CJ, Koop BF, and Levin DB (2006): Sequence analysis and organization of the *Neodiprion abietis* nucleopolyhedrovirus genome. *J. Virol.* **80**, 6952-6963.

Escasa SR, Lauzon HA, Mathur AC, Krell PJ, and Arif BM (2006): Sequence analysis of the *Choristoneura occidentalis* granulovirus genome. *J. Gen. Virol.* **87**, 1917-1933.

Ferrelli ML, Salvador R, Biedma ME, Berretta MF, Haase S, Sciocco-Cap A, Ghiringhelli PD, and

Romanowski V (2012): Genome of *Epinotia aporema* granulovirus (EpapGV), a polyorganotropic fast killing betabaculovirus with a novel thymidylate kinase gene. *BMC Genomics* **13**, 548.

Garcia-Maruniak A, Maruniak JE, Zanotto PM, Doumbouya AE, Liu JC, Merritt TM, and Lanoie JS (2004): Sequence analysis of the genome of the *Neodiprion sertifer* nucleopolyhedrovirus. *J. Virol.* **78**, 7036-7051.

Gencer D, Nalcacioglu R, Demirbag Z, and Demir I (2018): Complete genome sequence analysis of the *Malacosoma neustria* nucleopolyhedrovirus from Turkey. *Virus Genes* **54**, 706-718.

Gomi S, Majima K, and Maeda S (1999): Sequence analysis of the genome of *Bombyx mori* nucleopolyhedrovirus. *J. Gen. Virol.* **80**, 1323-1337.

Han G, Xu J, Liu Q, Li C, Xu H, and Lu Z (2016): Genome of *Cnaphalocrocis medinalis* granulovirus, the first crambidae-infecting betabaculovirus isolated from rice leaffolder to sequenced. *PLoS One* **11**, e0147882.

Harrison RL (2009): Genomic sequence analysis of the Illinois strain of the Agrotis ipsilon multiple nucleopolyhedrovirus. *Virus Genes* **38**, 155-170.

Harrison RL, and Lynn DE (2007): Genomic sequence analysis of a nucleopolyhedrovirus isolated from the diamondback moth, *Plutella xylostella*. *Virus Genes* **35**, 857-873.

Harrison RL, Mowery JD, Rowley DL, Bauchan GR, Theilmann DA, Rohrmann GF, and Erlandson MA (2018): The complete genome sequence of a third distinct baculovirus isolated from the true armyworm, *Mythimna unipuncta*, contains two copies of the lef-7 gene. *Virus Genes* **54**, 297-310.

Harrison RL, and Popham HJ (2008): Genomic sequence analysis of a granulovirus isolated from the Old World bollworm, *Helicoverpa armigera*. *Virus Genes* **36**, 565-581.

Harrison RL, Puttler B, and Popham HJ (2008): Genomic sequence analysis of a fast-killing isolate of *Spodoptera frugiperda* multiple nucleopolyhedrovirus. *J. Gen. Virol.* **89**, 775-790.

Harrison RL, Rowley DL, Mowery J, Bauchan GR, Theilmann DA, Rohrmann GF, and Erlandson MA (2017a): The complete genome sequence of a second distinct betabaculovirus from the true armyworm, *Mythimna unipuncta*. *PLoS One* **12**, e0170510.

Harrison RL, Rowley DL, Mowery JD, Bauchan GR, and Burand JP (2017b): The *Operophtera brumata* nucleopolyhedrovirus (OpbuNPV) represents an early, divergent lineage within genus Alphabaculovirus. *Viruses* **9**, 307.

Hashimoto Y, Hayakawa T, Ueno Y, Fujita T, Sano Y, and Matsumoto T (2000): Sequence analysis of the *Plutella xylostella* granulovirus genome. *Virology* **275**, 358-372.

Hayakawa T, Ko R, Okano K, Seong SI, Goto C, and Maeda S (1999): Sequence analysis of the *Xestia c-nigrum* granulovirus genome. *Virology* **262**, 277-297.

Hilton S, and Winstanley D (2008): Genomic sequence and biological characterization of a nucleopolyhedrovirus isolated from the summer fruit tortrix, *Adoxophyes orana*. *J. Gen. Virol.* **89**, 2898-2908.

Hyink O, Dellow RA, Olsen MJ, Caradoc-Davies KM, Drake K, Herniou EA, Cory JS, O'Reilly DR, and Ward VK (2002): Whole genome analysis of the *Epiphyas postvittana* nucleopolyhedrovirus. *J. Gen. Virol.* **83**, 957-971.

IJkel WFJ, van Strien EA, Heldens JG, Broer R, Zuidema D, Goldbach RW, and Vlak JM (1999): Sequence and organization of the *Spodoptera exigua* multicapsid nucleopolyhedrovirus genome. *J. Gen. Virol*. **80**, 3289-3304.

Ikeda M, Shikata M, Shirata N, Chaeychomsri S, and Kobayashi M (2006): Gene organization and complete sequence of the *Hyphantria cunea* nucleopolyhedrovirus genome. *J. Gen. Virol.* **87**, 2549-2562.

Jakubowska AK, Peters SA, Ziemnicka J, Vlak JM, and van Oers MM (2006): Genome sequence of an enhancin gene-rich nucleopolyhedrovirus (NPV) from *Agrotis segetum*: collinearity with Spodoptera exigua multiple NPV. *J. Gen. Virol.* **87**, 537-551.

Krejmer M, Skrzecz I, Wasag B, Szewczyk B, and Rabalski L (2015): The genome of *Dasychira pudibunda* nucleopolyhedrovirus (DapuNPV) reveals novel genetic connection between baculoviruses infecting moths of the Lymantriidae family. *BMC Genomics* **16**, 759.

Kuzio J, Pearson MN, Harwood SH, Funk CJ, Evans JT, Slavicek JM, and Rohrmann GF (1999): Sequence and analysis of the genome of a baculovirus pathogenic for *Lymantria dispar*. *Virology* **253**, 17-34.

Lange M, and Jehle JA (2003): The genome of the *Cryptophlebia leucotreta* granulovirus. *Virology* **317**, 220-336.

Lauzon HA, Jamieson PB, Krell PJ, and Arif BM (2005): Gene organization and sequencing of the *Choristoneura fumiferana* defective nucleopolyhedrovirus genome. *J. Gen. Virol.* **86**, 945-961.

Lauzon HA, Lucarotti CJ, Krell PJ, Feng Q, Retnakaran A, and Arif BM (2004): Sequence and organization of the *Neodiprion lecontei* nucleopolyhedrovirus genome. *J. Virol.* **78**, 7023-7035.

Li L, Donly C, Li Q, Willis LG, Keddie BA, Erlandson MA, and Theilmann DA (2002a): Identification and genomic analysis of a second species of nucleopolyhedrovirus isolated from *Mamestra configurata*. *Virology* **297**, 226-244.

Li Q, Donly C, Li L, Willis LG, Theilmann DA, and Erlandson M (2002b): Sequence and organization of the *Mamestra configurata* nucleopolyhedrovirus genome. *Virology* **294**, 106-121.

Liang Z, Zhang X, Yin X, Cao S, and Xu F (2011): Genomic sequencing and analysis of *Clostera anachoreta* granulovirus. *Arch. Virol.* **156**, 1185-1198.

Liang Z, Zhang X, Yin X, Song X, Shao X, and Wang L (2013): Comparative analysis of the genomes of *Clostera anastomosis* (L.) granulovirus and *Clostera anachoreta* granulovirus. *Arch. Virol.* **158**, 2109-2114.

Liu XP, Yin FF, Zhu Z, Hou DH, Wang J, Zhang L, Wang ML, Wang HL, Hu ZH, and Deng F (2014): Genomic sequencing and analysis of *Sucra jujuba* nucleopolyhedrovirus. *PLoS One* **9**, e110023.

Luque T, Finch R, Crook N, O'Reilly DR, and Winstanley D (2001): The complete sequence of the *Cydia pomonella* granulovirus genome. *J. Gen. Virol.* **82**, 2531-2547.

Ma XC, Shang JY, Yang ZN, Bao YY, Xiao Q, and Zhang CX (2007): Genome sequence and organization of a nucleopolyhedrovirus that infects the tea looper caterpillar, *Ectropis obliqua*. *Virology* **360**, 235-246.

Nai YS, Wu CY, Wang TC, Chen YR, Lau WH, Lo CF, Tsai MF, and Wang CH (2010): Genomic sequencing and analyses of *Lymantria xylina* multiple nucleopolyhedrovirus. *BMC Genomics* **11**, 116.

Nakai M, Goto C, Kang W, Shikata M, Luque T, and Kunimi Y (2003): Genome sequence and organization of a nucleopolyhedrovirus isolated from the smaller tea tortrix, *Adoxophyes honmai*. *Virology* **316**, 171-183.

Nie ZM, Zhang ZF, Wang D, He PA, Jiang CY, Song L, Chen F, Xu J, Yang L, Yu LL, Chen J, Lv ZB, Lu JJ, Wu XF, and Zhang YZ (2007): Complete sequence and organization of *Antheraea pernyi* nucleopolyhedrovirus, a dr-rich baculovirus. *BMC Genomics* **8**, 248.

Pang Y, Yu J, Wang L, Hu X, Bao W, Li G, Chen C, Han H, Hu S, and Yang H (2001): Sequence analysis of the *Spodoptera litura* multicapsid nucleopolyhedrovirus genome. *Virology* **287**, 391-404.

Rohrmann GF, Erlandson MA, and Theilmann DA (2013): The genome of a baculovirus isolated from Hemileuca sp. encodes a serpin ortholog. *Virus Genes* **47**, 357-364.

Rohrmann GF, Erlandson MA, and Theilmann DA (2014): Genome sequence of an alphabaculovirus isolated from *Choristoneura murinana*. *Genome Announc*. **2**, e01135-13.

Rohrmann GF, Erlandson MA, and Theilmann DA (2015a): A distinct group II alphabaculovirus isolated from a Peridroma species. *Genome Announc*. **3**, e00185-15.

Rohrmann GF, Erlandson MA, and Theilmann DA (2015b): Genome sequence of an alphabaculovirus isolated from the Oak Looper, Lambdina fiscellaria, contains a putative 2-kilobase-pair transposable element encoding a transposase and a FLYWCH domain-containing protein. *Genome Announc*. **3**, e00186-15.

Santos ER, Oliveira LB, Peterson L, Sosa-Gomez DR, Ribeiro BM, and Ardisson-Araujo DMP (2018): The complete genome sequence of the first hesperiid-infecting alphabaculovirus isolated from the leguminous pest *Urbanus proteus* (Lepidoptera: Hesperiidae). *Virus Res*. **249**, 76-84.

Tang XD, Xiao Q, Ma XC, Zhu ZR, and Zhang CX (2009): Morphology and genome of *Euproctis pseudoconspersa* nucleopolyhedrovirus. *Virus Genes* **38**, 495-506.

Thumbi DK, Béliveau C, Cusson M, Lapointe R, and Lucarotti CJ (2013): Comparative genome sequence analysis of *Choristoneura occidentalis* Freeman and C. rosaceana Harris (Lepidoptera: Tortricidae) Alphabaculoviruses. *PLoS One* **8**, e68968.

Thumbi DK, Eveleigh RJ, Lucarotti CJ, Lapointe R, Graham RI, Pavlik L, Lauzon HA, and Arif BM (2011): Complete sequence, analysis and organization of the *Orgyia leucostigma* nucleopolyhedrovirus genome. *Viruses* **3**, 2301-2327.

van Oers MM, Abma-Henkens MH, Herniou EA, de Groot JC, Peters S, and Vlak JM (2005): Genome sequence of *Chrysodeixis chalcites* nucleopolyhedrovirus, a baculovirus with two DNA photolyase genes. *J. Gen. Virol*. **86**, 2069-2080.

Wang J, Hou DH, Wang QR, Kuang WH, Zhang L, Li J, Shen S, Deng F, Wang HL, Hu ZH, and

Wang ML (2018): Genome analysis of a novel Group I alphabaculovirus obtained from *Oxyplax ochracea*. *PLoS One* **13**, e0192279.

Wang J, Zhu Z, Zhang L, Hou D, Wang M, Arif B, Kou Z, Wang H, Deng F, and Hu Z (2016): Genome sequencing and analysis of *Catopsilia pomona* nucleopolyhedrovirus: A distinct species in Group I alphabaculovirus. *PLoS One* **11**, e0155134.

Wang Y, Choi JY, Roh JY, Liu Q, Tao XY, Park JB, Kim JS, and Je YH (2011): Genomic sequence analysis of granulovirus isolated from the tobacco cutworm, *Spodoptera litura*. *PLoS One* **6**, e28163.

Wang YS, Huang GH, Cheng XH, Wang X, Garretson TA, Dai LY, Zhang CX, and Cheng XW (2012): Genome of *Thysanoplusia orichalcea* multiple nucleopolyhedrovirus lacks the superoxide dismutase gene. *J. Virol*. **86**, 11948-11949.

Wennmann JT, Gueli Alletti G, and Jehle JA (2015): The genome sequence of *Agrotis segetum* nucleopolyhedrovirus B (AgseNPV-B) reveals a new baculovirus species within the Agrotis baculovirus complex. *Virus Genes* **50**, 260-276.

Willis LG, Seipp R, Stewart TM, Erlandson MA, and Theilmann DA (2005): Sequence analysis of the complete genome of *Trichoplusia ni* single nucleopolyhedrovirus and the identification of a baculoviral photolyase gene. *Virology* **338**, 209-226.

Wormleaton S, Kuzio J, and Winstanley D (2003): The complete sequence of the *Adoxophyes orana* granulovirus genome. *Virology* **311**, 350-365.

Xiao H, and Qi Y (2007): Genome sequence of *Leucania seperata* nucleopolyhedrovirus. *Virus Genes* **35**, 845-856.

Xu YP, Ye ZP, Niu CY, Bao YY, Wang WB, Shen WD, and Zhang CX (2010): Comparative analysis of the genomes of *Bombyx mandarina* and *Bombyx mori* nucleopolyhedroviruses. *J. Microbiol*. **48**, 102-110.

Yin F, Zhu Z, Liu X, Hou D, Wang J, Zhang L, Wang M, Kou Z, Wang H, Deng F, and Hu Z (2015): The complete genome of a new betabaculovirus from *Clostera anastomosis*. *PLoS One* **10**, e0132792.

Zhang BQ, Cheng RL, Wang XF, and Zhang CX (2012): The genome of *Pieris rapae* granulovirus. *J. Virol*. **86**, 9544.

Zhang CX, Ma XC, and Guo ZJ (2005): Comparison of the complete genome sequence between C1 and G4 isolates of the *Helicoverpa armigera* single nucleocapsid nucleopolyhedrovirus. *Virology* **333**, 190-199.

Zhu Z, Yin FF, Liu XP, Hou DH, Wang J, Zhang L, Arif B, Wang HL, Deng F, and Hu ZH (2014): Genome sequence and analysis of *Buzura suppressaria* nucleopolyhedrovirus: a Group II alphabaculovirus. *PLoS One* **9**, e86450.

Table S2. Summary of protein-protein and DNA-protein interactions of baculoviruses

A. Baculoviral protein-protein interactions

Protein	Protein	Method[a]	Reference
LEF2	LEF1	Y2H, Co-IP	(Evans *et al.*, 1997)
POLH	POLH	Y2H	(Braunagel and Summers, 2007)
POLH	P78/83	Y2H	(Braunagel and Summers, 2007)
POLH	BV/ODV-E26	Y2H	(Braunagel and Summers, 2007)
POLH	ODV-E66	Y2H	(Braunagel and Summers, 2007)
POLH	FP25K	Y2H	(Braunagel and Summers, 2007)
POLH	VP39	Y2H	(Braunagel and Summers, 2007)
POLH	AC91	Y2H	(Braunagel and Summers, 2007)
POLH	ODV-E25	Y2H	(Braunagel and Summers, 2007)
POLH	BV/ODV-C42	Y2H	(Braunagel and Summers, 2007)
POLH	PIF3	Y2H	(Braunagel and Summers, 2007)
POLH	ODV-EC27	Y2H	(Braunagel and Summers, 2007)
POLH	PIF5	Y2H	(Braunagel and Summers, 2007)
P78/83	VP39	Y2H	(Braunagel and Summers, 2007)
P78/83	BV/ODV-C42	Y2H, Native PAGE	(Braunagel *et al.*, 2001)
PK1	PKIP	Y2H, Pull down	(Fan *et al.*, 1998)
AC11	AC11	Co-IP, BiFC	(Yue *et al.*, 2018)
AC11	GP41	Co-IP, BiFC	(Yue *et al.*, 2018)
AC11	AC93	Co-IP, BiFC	(Yue *et al.*, 2018)
BV/ODV-E26	ODV-E66	Y2H, Co-IP	(Braunagel *et al.*, 1999)
BV/ODV-E26	FP25K	Y2H, Co-IP	(Beniya *et al.*, 1998; Braunagel *et al.*, 1999; Braunagel and Summers 2007)
BV/ODV-E26	PEP	Y2H	(Zhang *et al.*, 2018)

BV/ODV-E26	IE1	Y2H, Co-IP, TAP	(Braunagel and Summers, 2007; Nie *et al.*, 2009)
BV/ODV-E26	IE0	Y2H, Co-IP, TAP	(Nie *et al.*, 2009)
PKIP	PKIP	Y2H, Co-IP	(Zhang *et al.*, 2018)
PKIP	FP25K	Y2H, Co-IP	(Zhang *et al.*, 2018)
PKIP	38K	Y2H	(Zhang *et al.*, 2018)
PKIP	P6.9	Co-IP	(Lai *et al.*, 2020)
PKIP	P48	Y2H	(Zhang *et al.*, 2018)
PKIP	GP64	Y2H, Co-IP	(Zhang *et al.*, 2018)
PKIP	49K	Y2H	(Zhang *et al.*, 2018)
PKIP	ODV-E18	Y2H	(Zhang *et al.*, 2018)
PKIP	ODV-EC27	Y2H, Co-IP	(Zhang *et al.*, 2018)
V-Ubi	FP25K	Y2H	(Zhang *et al.*, 2018)
V-Ubi	VP39	Y2H	(Zhang *et al.*, 2018)
V-Ubi	V-CATH	Y2H	(Zhang *et al.*, 2018)
V-Ubi	PEP	Y2H	(Zhang *et al.*, 2018)
V-Ubi	EXON0	Co-IP	(Biswas *et al.*, 2018)
V-Ubi	49K	Y2H	(Zhang *et al.*, 2018)
LEF11	LEF11	Co-IP, BiFC, Non-reducing SDS-PAGE	(Dong *et al.*, 2015; Zhang *et al.*, 2014)
LEF11	LEF3	BiFC	(Zhang *et al.*, 2014)
ODV-E66	FP25K	Y2H, Co-IP	(Braunagel *et al.*, 1999)
ODV-E66	VP39	Y2H, Co-IP	(Braunagel *et al.*, 1999; Braunagel and Summers, 2007)
ODV-E66	ODV-E25	Y2H, Co-IP	(Braunagel *et al.*, 1999)
ODV-E66	ODV-EC27	Y2H	(Braunagel and Summers, 2007)
LEF10	LEF10	Y2H, Non-reducing	(Nan *et al.*, 2019)

		SDS-PAGE	
VP1054	38K	Y2H, Co-IP	(Wu *et al.*, 2008)
VP1054	BV/ODV-C42	Co-IP	(Guan *et al.*, 2016)
VP1054	VP80	Co-IP	(Guan *et al.*, 2016)
FGF	V-CATH	Y2H	(Zhang *et al.*, 2018)
FGF	FP25K	Y2H	(Zhang *et al.*, 2018)
FP25K	FP25K	Y2H	(Zhang *et al.*, 2018)
FP25K	GP37	Y2H	(Zhang *et al.*, 2018)
FP25K	38 K	Y2H	(Zhang *et al.*, 2018)
FP25K	P6.9	Y2H	(Zhang *et al.*, 2018)
FP25K	BV/ODV-C42	Y2H	(Zhang *et al.*, 2018)
FP25K	GP64	Y2H, Co-IP	(Braunagel *et al.*, 1999; Zhang *et al.*, 2018)
FP25K	EXON0	Y2H, Co-IP	(Fang *et al.*, 2007; Fang *et al.*, 2008)
FP25K	ODV-E18	Y2H	(Zhang *et al.*, 2018)
FP25K	IE1	Y2H	(Braunagel and Summers, 2007)
GP37	VP39	Y2H	(Zhang *et al.*, 2018)
GP37	ODV-E25	Y2H	(Zhang *et al.*, 2018)
GP37	38 K	Y2H	(Zhang *et al.*, 2018)
GP37	BV/ODV-C42	Y2H	(Zhang *et al.*, 2018)
AC66	AC66	Y2H	(Peng *et al.*, 2010)
AC66	EXON0	Co-IP	(Biswas et al. 2018)
LEF3	LEF3	Y2H, Pull down, Cross linking	(Evans and Rohrmann, 1997; Peng *et al.*, 2010)
LEF3	Helicase	Y2H	(Evans *et al.*, 1999; Peng *et al.*, 2010)
LEF3	ALK-EXO	AUC	(Mikhailov *et al.*, 2003)

AC76	AC76	Co-IP, BiFC	(Yue *et al.*, 2018)
AC76	AC78	Co-IP, BiFC	(Yue *et al.*, 2018)
AC76	AC93	Co-IP, BiFC	(Yue *et al.*, 2018)
AC76	P48	Co-IP, BiFC	(Yue *et al.*, 2018)
AC78	AC78	Co-IP, BiFC	(Yue *et al.*, 2018)
AC78	AC93	Co-IP, BiFC	(Yue *et al.*, 2018)
GP41	GP41	Y2H, BiFC, Non-reducing SDS-PAGE	(Li *et al.*, 2018; Peng *et al.*, 2010; Yue *et al.*, 2018)
GP41	38K	Y2H	(Peng *et al.*, 2010)
GP41	P12	Y2H	(Peng *et al.*, 2010)
CG30	CG30	Y2H	(Peng *et al.*, 2009)
VP39	ODV-EC27	Y2H	(Braunagel and Summers, 2007; Zhang *et al.*, 2018)
VP39	VP39	Y2H	(Braunagel and Summers, 2007)
VP39	38K	Y2H, Co-IP	(Wu *et al.*, 2008)
VP39	AC91	Y2H	(Braunagel and Summers, 2007)
VP39	P6.9	Y2H	(Zhang *et al.*, 2018)
VP39	BV/ODV-C42	Y2H	(Braunagel and Summers, 2007)
VP39	PIF3	Y2H	(Braunagel and Summers, 2007)
VP39	GP64	Y2H, Co-IP	(Zhang *et al.*, 2018)
VP39	ME53	Y2H	(Zhang *et al.*, 2018)
VP39	ODV-E18	Y2H	(Zhang *et al.*, 2018)
VP39	PIF5	Y2H	(Braunagel and Summers, 2007)
AC91	IE1	Y2H	(Braunagel and Summers, 2007)
P33	P33	GF, AUC	(Hakim *et al.*, 2011; Kuang *et al.*, 2017)
P33	PIF5	Pull down	(Zhang *et al.*, 2020)

AC93	AC93	Co-IP, BiFC	(Yue *et al.*, 2018)
ODV-E25	38 K	Y2H	(Zhang *et al.*, 2018)
ODV-E25	ME53	Y2H	(Zhang *et al.*, 2018)
ODV-E25	ODV-E18	Y2H	(Zhang *et al.*, 2018)
38K	PIF2	Y2H	(Peng *et al.*, 2010)
38K	PP31	Y2H	(Zhang *et al.*, 2018)
38K	38K	Y2H, Co-IP	(Peng *et al.*, 2010; Wu *et al.*, 2008; Zhang *et al.*, 2018)
38K	BV/ODV-C42	Y2H	(Zhang *et al.*, 2018)
38K	P48	Y2H	(Zhang *et al.*, 2018)
38K	VP80	Y2H, Co-IP	(Wu *et al.*, 2008)
38K	PIF3	Y2H	(Peng *et al.*, 2010)
38K	V-CATH	Y2H	(Zhang *et al.*, 2018)
38K	GP64	Y2H, Co-IP	(Zhang *et al.*, 2018)
38K	ODV-E18	Y2H	(Zhang *et al.*, 2018)
38K	ODV-EC27	Y2H, Co-IP	(Zhang *et al.*, 2018)
38K	PIF5	Y2H	(Peng *et al.*, 2010)
P6.9	V-CATH	Y2H	(Zhang *et al.*, 2018)
P6.9	AC132	Co-IP	(Fang *et al.*, 2016)
BV/ODV-C42	EXON0	Y2H, Co-IP	(Fang *et al.*, 2007; Fang *et al.*, 2008)
BV/ODV-C42	ODV-E18	Y2H	(Zhang *et al.*, 2018)
BV/ODV-C42	ODV-EC27	Y2H, Native PAGE	(Braunagel *et al.*, 2001)
BV/ODV-C42	PIF5	Y2H	(Braunagel and Summers, 2007)
P48	P48	Y2H	(Zhang *et al.*, 2018)
P48	ODV-E18	Y2H	(Zhang *et al.*, 2018)
P48	AC146	Co-IP, BiFC	(Yue *et al.*, 2018)
VP80	HA100	Y2H, Co-IP	(Peng *et al.*, 2010)

ODV-EC43	49K	Y2H	(Peng *et al.*, 2010)
V-ChiA	V-CATH	Pull down, BiFC	(Hodgson *et al.*, 2011)
V-CATH	ME53	Y2H	(Zhang *et al.*, 2018)
V-CATH	ODV-E18	Y2H	(Zhang *et al.*, 2018)
V-CATH	ODV-EC27	Y2H	(Zhang *et al.*, 2018)
GP64	GP64	Y2H	(Zhang *et al.*, 2018)
GP64	PEP	Y2H	(Zhang *et al.*, 2018)
GP64	ODV-E18	Co-IP	(Zhang *et al.*, 2018)
P24	P24	Y2H	(Peng *et al.*, 2010)
AC132	ODV-E18	Co-IP	(Fang *et al.*, 2016)
ALK-EXO	ALK-EXO	GF	(Mikhailov *et al.*, 2003)
P26	P26	Y2H	(Goenka and Weaver, 2008)
ME53	ODV-E18	Y2H	(Zhang *et al.*, 2018)
ME53	ODV-EC27	Y2H	(Zhang *et al.*, 2018)
49K	ODV-EC27	Y2H	(Zhang *et al.*, 2018)
EC27	ODV-EC27	Y2H, Co-IP	(Braunagel and Summers, 2007; Zhang *et al.*, 2018)
AC146	AC146	Co-IP, BiFC	(Yue *et al.*, 2018)
ODV-E66	PIF2	Y2H	(Peng *et al.*, 2010)
ODV-E66	PIF3	Y2H	(Peng *et al.*, 2010)
ODV-E66	PIF4	Co-IP, BiFC	(Dong *et al.*, 2014)
ODV-E66	PIF5	Y2H	(Peng *et al.*, 2010)
P74	PIF5	Y2H	(Peng *et al.*, 2010)
PIF1	PIF2	Y2H, BiFC	(Zheng *et al.*, 2017)
PIF1	PIF3	Y2H, BiFC	(Zheng *et al.*, 2017)
PIF1	PIF4	Y2H, Co-IP, BiFC	(Dong *et al.*, 2014; Zheng *et al.*, 2017)
PIF1	PIF5	Y2H	(Peng *et al.*, 2010)

PIF1	VP91	Y2H, BiFC	(Zheng *et al.*, 2017)
PIF2	PIF3	Y2H, BiFC	(Peng *et al.*, 2010; Zheng *et al.*, 2017)
PIF2	PIF4	Co-IP, BiFC	(Dong *et al.*, 2014)
PIF2	PIF5	Y2H	(Peng *et al.*, 2010)
PIF3	PIF3	Y2H	(Peng *et al.*, 2010)
PIF3	PIF4	Y2H, Co-IP, BiFC	(Dong *et al.*, 2014; Zheng *et al.*, 2017)
PIF3	PIF5	Y2H	(Peng *et al.*, 2010)
PIF5	PIF5	Y2H	(Peng *et al.*, 2010)
PIF5	HA107	Y2H	(Peng *et al.*, 2010)
49K	HA122	Y2H	(Peng *et al.*, 2010)
HA44	HA44	Y2H, Co-IP	(Peng *et al.*, 2010)

B. Baculoviral DNA-protein interactions

Protein	**Method[a]**	**Reference**
BRO	DNA-C	(Zemskov *et al.*, 2000)
DBP	EMSA	(Mikhailov *et al.*, 1998; Mikhailov *et al.*, 2008)
PP31	Southwestern blot	(Guarino *et al.*, 1992)
AC59 (HA51)	DNA-C	(Li *et al.*, 2006a; Li *et al.*, 2006b)
AC60 (HA52)	DNA-C	(Li *et al.*, 2006a; Li *et al.*, 2006b)
DNA POL	DNA-C	(Hang and Guarino, 1999)
LEF3	DNA-C/ChIP	(Hang *et al.*, 1995; Ito *et al.*, 2004)
VLF-1	EMSA	(Mikhailov and Rohrmann, 2002)
Helicase	EMSA/ChIP	(Ito *et al.*, 2004; McDougal and Guarino, 2000)
P6.9	EM	(Tweeten *et al.*, 1980)
ALK-EXO	DNA digestion	(Mikhailov *et al.*, 2003)
IE1	ChIP	(Ito *et al.*, 2004)

C. Baculovirus-host protein-protein interactions

Viral Protein	Host Protein	Method[a]	Reference
BRO	Laminin	Y2H, Pull down	(Kang *et al.*, 2003)
LEF2	TER94	BiFC	(Li *et al.*, 2020)
P78/83	Actin	Actin binding	(Lanier and Volkman, 1998)
P78/83	Arp2/3	Actin polymerization	(Goley *et al.*, 2006)
AC11	VPS2B	Co-IP, BiFC	(Yue *et al.*, 2018)
AC11	VPS20	BiFC	(Yue *et al.*, 2018)
AC11	VPS24	Co-IP, BiFC	(Yue *et al.*, 2018)
AC11	VPS46	Co-IP, BiFC	(Yue *et al.*, 2018)
AC11	VPS60	Co-IP, BiFC	(Yue *et al.*, 2018)
LEF1	TER94	BiFC	(Li *et al.*, 2020)
AC34	P40	Co-IP	(Mu *et al.*, 2016)
AC34	P34	Co-IP	(Mu *et al.*, 2016)
AC34	P20	Co-IP	(Mu *et al.*, 2016)
LEF11	ATAD3A	Co-IP	(Dong *et al.*, 2017)
LEF11	HSP60	Co-IP	(Dong *et al.*, 2017)
LEF11	Importin α-3	Co-IP	(Zhang *et al.*, 2014)
DNA POL	TER94	BiFC	(Li *et al.*, 2020)
LEF3	TER94	Co-IP, Cross-linking, BiFC	(Li *et al.*, 2020)
AC76	NSF	Co-IP, BiFC	(Guo *et al.*, 2017)
AC76	VPS2B	Co-IP, BiFC	(Yue *et al.*, 2018)
AC76	VPS20	Co-IP, BiFC	(Yue *et al.*, 2018)
AC76	VPS24	Co-IP, BiFC	(Yue *et al.*, 2018)
AC76	SNF7	Co-IP, BiFC	(Yue *et al.*, 2018)
AC76	VPS46	Co-IP, BiFC	(Yue *et al.*, 2018)
AC76	VPS60	Co-IP, BiFC	(Yue *et al.*, 2018)

AC78	NSF	Co-IP, BiFC	(Guo *et al.*, 2017)
AC78	VPS2B	BiFC	(Yue *et al.*, 2018)
AC78	VPS20	Co-IP, BiFC	(Yue *et al.*, 2018)
AC78	VPS24	Co-IP, BiFC	(Yue *et al.*, 2018)
AC78	SNF7	Co-IP, BiFC	(Yue *et al.*, 2018)
AC78	VPS46	Co-IP, BiFC	(Yue *et al.*, 2018)
AC78	VPS60	Co-IP, BiFC	(Yue *et al.*, 2018)
GP41	NSF	Co-IP, BiFC	(Guo *et al.*, 2017)
GP41	VPS2B	Co-IP	(Yue *et al.*, 2018)
GP41	VPS20	Co-IP, BiFC	(Yue *et al.*, 2018)
GP41	VPS24	Co-IP, BiFC	(Yue *et al.*, 2018)
GP41	SNF7	Co-IP, BiFC	(Yue *et al.*, 2018)
GP41	VPS46	Co-IP, BiFC	(Yue *et al.*, 2018)
GP41	VPS60	Co-IP, BiFC	(Yue *et al.*, 2018)
GP41	VPS4	Co-IP, BiFC	(Yue *et al.*, 2018)
VP39	Actin	Actin overlay	(Lanier and Volkman, 1998)
P33	P53	Co-IP	(Prikhod'ko *et al.*, 1999; Wu *et al.*, 2013)
AC93	NSF	Co-IP, BiFC	(Guo *et al.*, 2017)
AC93	SNF7	Co-IP, BiFC	(Yue *et al.*, 2018)
AC93	VPS4	Co-IP, BiFC	(Yue *et al.*, 2018)
AC93	VPS2B	Co-IP, BiFC	(Yue *et al.*, 2018)
AC93	VPS20	Co-IP, BiFC	(Yue *et al.*, 2018)
AC93	VPS24	Co-IP, BiFC	(Yue *et al.*, 2018)
AC93	VPS46	Co-IP, BiFC	(Yue *et al.*, 2018)
AC93	VPS60	Co-IP, BiFC	(Yue *et al.*, 2018)
Helicase	TER94	Co-IP, Cross-linking, BiFC	(Li *et al.*, 2020)
P48	NSF	Co-IP, BiFC	(Guo *et al.*, 2017)

P48	VPS24	Co-IP, BiFC	(Yue *et al.*, 2018)
P48	VPS4	BiFC	(Yue *et al.*, 2018)
VP80	Actin	Co-IP	(Marek *et al.*, 2011)
PK2	eIF2α kinase	Y2H	(Li *et al.*, 2015)
LEF7	SKP1	Co-IP	(Mitchell *et al.*, 2013)
GP64	NPC1	Co-IP	(Li *et al.*, 2019)
GP64	SINAL10	Y2H, Co-IP	(Feng *et al.*, 2018)
P10	Tubulin	Y2H, Pull down	(Patmanidi *et al.*, 2003)
EXON0	Tubulin	Co-IP, TAP	(Fang *et al.*, 2009)
49K	VPS20	BiFC	(Yue *et al.*, 2018)
49K	VPS24	Co-IP, BiFC	(Yue *et al.*, 2018)
49K	VPS46	Co-IP, BiFC	(Yue *et al.*, 2018)
ODV-EC27	Cdc2	Co-IP	(Belyavskyi *et al.*, 1998)
ODV-EC27	Cdk6	Co-IP	(Belyavskyi *et al.*, 1998)
AC146	SNF7	Co-IP, BiFC	(Yue *et al.*, 2018)
AC146	VPS20	BiFC	(Yue *et al.*, 2018)
AC146	VPS24	Co-IP, BiFC	(Yue *et al.*, 2018)
AC146	VPS46	Co-IP, BiFC	(Yue *et al.*, 2018)
AC146	VPS60	Co-IP, BiFC	(Yue *et al.*, 2018)
IE1	TER94	BiFC	(Li *et al.*, 2020)

Note:

a: AUC: analytical ultracentrifugation; BiFC: bimolecular fluorescent complimentary; ChIP: chromatin immunoprecipitation; Co-IP: co-inmunoprecipitation; DNA-C: DNA-cellulose chromatography; EM: Electron microscopy; EMSA: Electrophoretic mobility shift assay; GF: Gel filtration chromatography; TAP: tandem affinity purification; Y2H: yeast two-hybrid; Native PAGE: native polyacrylamide gel electrophoresis; Non-reducing SDS-PAGE: non-reducing sodium dodecyl sulfate polyacrylamide gel electrophoresis.

References

Belyavskyi M, Braunagel SC, and Summers MD (1998): The structural protein odv-ec27 of *Autographa californica* nucleopolyhedrovirus is a multifunctional viral cyclin. *Proc. Natl. Acad. Sci. U. S. A.* **95**, 11205-11210.

Beniya H, Braunagel SC, and Summers MD (1998): *Autographa californica* nuclear polyhedrosis virus: Subcellular localization and protein trafficking of bv/odv-e26 to intranuclear membranes and viral envelopes. *Virology*. **240**, 64-75.

Biswas S, Willis LG, Fang M, Nie Y, and Theilmann DA (2018): *Autographa californica* nucleopolyhedrovirus ac141 (exon0), a potential e3 ubiquitin ligase, interacts with viral ubiquitin and ac66 to facilitate nucleocapsid egress. *J. Virol*. **92**, e01713-17.

Braunagel SC, and Summers MD (2007): Molecular biology of the baculovirus occlusion-derived virus envelope. *Curr. Drug. Targets* **8**, 1084-1095.

Braunagel SC, Guidry PA, Rosas-Acosta G, Engelking L, and Summers MD (2001): Identification of bv/odv-c42, an *Autographa californica* nucleopolyhedrovirus orf101-encoded structural protein detected in infected-cell complexes with odv-ec27 and p78/83. *J. Virol.* **75**, 12331-12338.

Braunagel SC, Burks JK, Rosas-Acosta G, Harrison RL, Ma H, and Summers MD (1999): Mutations within the *Autographa californica* nucleopolyhedrovirus fp25k gene decrease the accumulation of odv-e66 and alter its intranuclear transport. *J. Virol.* **73**, 8559-8570.

Dong ZQ, Hu N, Dong FF, Chen TT, Jiang YM, Chen P, Lu C, and Pan MH (2017): Baculovirus lef-11 hijack host atpase atad3a to promote virus multiplication in *Bombyx mori* cells. *Sci. Rep.* **7**, 46187.

Dong ZQ, Hu N, Zhang J, Chen TT, Cao MY, Li HQ, Lei XJ, Chen P, Lu C, and Pan MH (2015): Oligomerization of baculovirus lef-11 is involved in viral DNA replication. *Plos One* **10**, e0144930

Dong ZQ, Zhang J, Chen XM, He Q, Cao MY, Wang L, Li HQ, Xiao WF, Pan CX, Lu C, and Pan MH (2014): *Bombyx mori* nucleopolyhedrovirus orf79 is a per os infectivity factor associated with the pif complex. *Virus Res.* **184**, 62-70.

Evans JT, and Rohrmann GF (1997): The baculovirus single-stranded DNA binding protein, lef-3, forms a homotrimer in solution. *J. Virol*. **71**, 3574-3579.

Evans JT, Leisy DJ, and Rohrmann GF (1997): Characterization of the interaction between the baculovirus replication factors lef-1 and lef-2. *J. Virol*. **71**, 3114-3119.

Evans JT, Rosenblatt GS, Leisy DJ, and Rohrmann GF (1999): Characterization of the interaction between the baculovirus ssdna-binding protein (lef-3) and putative helicase (p143). *J. Gen. Virol.* **80**, 493-500.

Fan X, McLachlin JR, and Weaver RF (1998): Identification and characterization of a protein kinase-interacting protein encoded by the *Autographa californica* nuclear polyhedrosis virus. *Virology* **240**, 175-182.

Fang M, Dai X, and Theilmann DA (2007): *Autographa californica* multiple nucleopolyhedrovirus exon0 (orf141) is required for efficient egress of nucleocapsids from the nucleus. *J. Virol.* **81**, 9859-9869.

Fang M, Nie Y, and Theilmann DA (2009): Acmnpv exon0 (ac141) which is required for the efficient egress of budded virus nucleocapsids interacts with beta-tubulin. *Virology* **385**, 496-504.

Fang M, Nie Y, Dai X, and Theilmann DA (2008): Identification of acmnpv exon0 (ac141) domains required for efficient production of budded virus, dimerization and association with bv/odv-c42 and fp25. *Virology* **375**, 265-276.

Fang Z, Li C, Wu W, Yuan M, and Yang K (2016): The *Autographa californica* multiple nucleopolyhedrovirus ac132 plays a role in nuclear entry. *J. Gen. Virol.* **97**, 3030-3038.

Feng M, Kong X, Zhang J, Xu W, and Wu X (2018): Identification of a novel host protein sinal10 interacting with gp64 and its role in *Bombyx mori* nucleopolyhedrovirus infection. *Virus Res.* **247**, 102-110.

Goenka S, and Weaver RF (2008): The p26 gene of the *Autographa californica* nucleopolyhedrovirus: Timing of transcription, and cellular localization and dimerization of product. *Virus Res.* **131**, 136-144.

Goley ED, Ohkawa T, Mancuso J, Woodruff JB, D'Alessio JA, Cande WZ, Volkman LE, and Welch MD (2006): Dynamic nuclear actin assembly by arp2/3 complex and a baculovirus wasp-like protein. *Science*, **314**, 464-467.

Guan ZW, Zhong L, Li CY, Wu WB, Yuan MJ, and Yang K (2016): The *Autographa californica*

multiple nucleopolyhedrovirus ac54 gene is crucial for localization of the major capsid protein vp39 at the site of nucleocapsid assembly. *J. Virol.* **90**, 4115-4126.
Guarino LA, Dong W, Xu B, Broussard DR, Davis RW, and Jarvis DL (1992): Baculovirus phosphoprotein pp31 is associated with virogenic stroma. *J. Virol.* **66**, 7113-7120.
Guo Y, Yue Q, Gao J, Wang Z, Chen YR, Blissard GW, Liu TX, and Li Z (2017): Roles of cellular nsf protein in entry and nuclear egress of budded virions of *Autographa californica* multiple nucleopolyhedrovirus. *J. Virol.* **91**, e01111-17.
Hakim M, Mandelbaum A, and Fass D (2011): Structure of a baculovirus sulfhydryl oxidase, a highly divergent member of the erv flavoenzyme family. *J. Virol.* **85**, 9406-9413.
Hang X, and Guarino LA (1999): Purification of *Autographa californica* nucleopolyhedrovirus DNA polymerase from infected insect cells. *J. Gen. Virol*. **80**, 2519-2526.
Hang X, Dong W, and Guarino LA (1995): The lef-3 gene of *Autographa californica* nuclear polyhedrosis virus encodes a single-stranded DNA-binding protein. *J. Virol.* **69**, 3924-3928.
Hodgson JJ, Arif BM, and Krell PJ (2011): Interaction of *Autographa californica* multiple nucleopolyhedrovirus cathepsin protease progenitor (prov-cath) with insect baculovirus chitinase as a mechanism for prov-cath cellular retention. *J. Virol.* **85**, 3918-3929.
Ito E, Sahri D, Knippers R, and Carstens EB (2004): Baculovirus proteins ie-1, lef-3, and p143 interact with DNA in vivo: A formaldehyde cross-linking study. *Virology* **329**, 337-347.
Kang WK, Imai N, Suzuki M, Iwanaga M, Matsumoto S, and Zemskov EA (2003): Interaction of *Bombyx mori* nucleopolyhedrovirus bro-a and host cell protein laminin. *Arch. Virol*. **148**, 99-113.
Kuang W, Zhang H, Wang M, Zhou NY, Deng F, Wang H, Gong P, and Hu Z (2017): Three conserved regions in baculovirus sulfhydryl oxidase p33 are critical for enzymatic activity and function. *J. Virol.* **91**, e01158-17.
Lai QY, Xu LX, Wang YL, Luo WT, Zhu LY, Yuan MJ, Wu WB, and Yang K (2020): Acmnpv pkip is required for hyperexpression of very late genes and involved in the hyperphosphorylation of the viral basic protein p6.9. *Virus Res*. **279**, 197889.
Lanier LM, and Volkman LE (1998): Actin binding and nucleation by *Autographa californica* m nucleopolyhedrovirus. *Virology*, **243**: 167-177.
Li JJ, Cao C, Fixsen SM, Young JM, Ono C, Bando H, Elde NC, Katsuma S, Dever TE, and Sicheri F (2015): Baculovirus protein pk2 subverts eif2alpha kinase function by mimicry of its kinase domain c-lobe. *Proc. Natl. Acad. Sci. U. S. A.* **112**, e4364-4373.
Li L, Li Z, Chen W, Liu C, Huang H, Yang K, and Pang Y (2006a): Characterization of *Spodoptera exigua* multicapsid nucleopolyhedrovirus orf100 and orf101, two homologues of e. Coli chab. *Virus Res*. **121**, 42-50.
Li Y, Hu L, Chen T, Chang M, Deng F, Hu Z, Wang H, and Wang M (2020): Host aaa+ atpase ter94 plays critical roles in building the baculovirus viral replication factory and virion morphogenesis. *J. Virol*. **94**, e01674-19.
Li YM, Shen S, Hu LB, Deng F, Vlak JM, Hu ZH, Wang HL, and Wang ML (2018): The functional oligomeric state of tegument protein gp41 is essential for baculovirus budded virion and occlusion-derived virion assembly. *J. Virol*. **92**, e02083-17.
Li Z, Li L, Yu H, Li S, and Pang Y (2006b): Characterization of two homologues of chab in *Spodoptera litura* multicapsid nucleopolyhedrovirus. *Gene* **372**, 33-43.
Li Z, Fan Y, Wei J, Mei X, He Q, Zhang Y, Li T, Long M, Chen J, Bao J, Pan G, Li C, and Zhou Z (2019): Baculovirus utilizes cholesterol transporter niemann-pick c1 for host cell entry. *Front. Microbiol*. **10**, 2825.
Marek M, Merten OW, Galibert L, Vlak JM, and van Oers MM (2011): Baculovirus vp80 protein and the f-actin cytoskeleton interact and connect the viral replication factory with the nuclear periphery. *J. Virol*. **85**, 5350-5362.
McDougal VV, and Guarino LA (2000): The *Autographa californica* nuclear polyhedrosis virus p143 gene encodes a DNA helicase. *J. Virol*. **74**, 5273-5279.
Mikhailov VS, and Rohrmann GF (2002): Binding of the baculovirus very late expression factor 1 (vlf-1) to different DNA structures. *BMC Mol. Biol*. **3**, 14.
Mikhailov VS, Okano K, and Rohrmann GF (2003): Baculovirus alkaline nuclease possesses a 5'-->3' exonuclease activity and associates with the DNA-binding protein lef-3. *J. Virol*. **77**, 2436-2444.
Mikhailov VS, Vanarsdall AL, and Rohrmann GF (2008): Isolation and characterization of the DNA-binding protein (dbp) of the *Autographa californica* multiple nucleopolyhedrovirus. *Virology* **370**, 415-429.
Mikhailov VS, Mikhailova AL, Iwanaga M, Gomi S, and Maeda S (1998): *Bombyx mori*

nucleopolyhedrovirus encodes a DNA-binding protein capable of destabilizing duplex DNA. *J. Virol*. **72**, 3107-3116.

Mitchell JK, Byers NM, and Friesen PD (2013): Baculovirus f-box protein lef-7 modifies the host DNA damage response to enhance virus multiplication. *J. Virol*. **87**, 12592-12599.

Mu J, Zhang Y, Hu Y, Hu X, Zhou Y, Chen X, and Wang Y (2016): The role of viral protein ac34 in nuclear relocation of subunits of the actin-related protein 2/3 complex. *Virol. Sin*. **31**, 480-489.

Nan H, Chen HY, Tuite MF, and Xu XD (2019): A viral expression factor behaves as a prion. *Nat. Commun.* **10**, 359.

Nie Y, Fang M, and Theilmann DA (2009): Acmnpv ac16 (da26, bv/odv-e26) regulates the levels of ie0 and ie1 and binds to both proteins via a domain located within the acidic transcriptional activation domain. *Virology* **385**, 484-495.

Patmanidi AL, Possee RD, and King LA (2003): Formation of p10 tubular structures during acmnpv infection depends on the integrity of host-cell microtubules. *Virology* **317**, 308-320.

Peng K, Wu M, Deng F, Song J, Dong C, Wang H, and Hu Z (2009): Identification of protein-protein interactions of the odv associated proteins of hearnpv. *J. Gen. Virol*. **91**, 659-670.

Peng K, Wu M, Deng F, Song J, Dong C, Wang H, and Hu Z (2010): Identification of protein-protein interactions of the occlusion-derived virus-associated proteins of *Helicoverpa armigera* nucleopolyhedrovirus. *J. Gen. Virol*. **91**, 659-670.

Prikhod'ko GG, Wang Y, Freulich E, Prives C, and Miller LK (1999): Baculovirus p33 binds human p53 and enhances p53-mediated apoptosis. *J. Virol*. **73**, 1227-1234.

Tweeten KA, Bulla LA, and Consigli RA (1980): Characterization of an extremely basic protein derived from granulosis virus nucleocapsids. *J. Virol*. **33**, 866-876.

Wu W, Clem RJ, Rohrmann GF, and Passarelli AL (2013): The baculovirus sulfhydryl oxidase ac92 (p33) interacts with the *Spodoptera frugiperda* p53 protein and oxidizes it in vitro. *Virology* **447**, 197-207.

Wu W, Liang H, Kan J, Liu C, Yuan M, Liang C, Yang K, and Pang Y (2008): *Autographa californica* multiple nucleopolyhedrovirus 38k is a novel nucleocapsid protein that interacts with vp1054, vp39, vp80, and itself. *J. Virol*. **82**, 12356-12364.

Yue Q, Yu Q, Yang Q, Xu Y, Guo Y, Blissard GW, and Li Z (2018): Distinct roles of cellular escrt-i and escrt-iii proteins in efficient entry and egress of budded virions of *Autographa californica* multiple nucleopolyhedrovirus. *J. Virol*. **92**, e01636-17.

Zemskov EA, Kang W, and Maeda S (2000): Evidence for nucleic acid binding ability and nucleosome association of *Bombyx mori* nucleopolyhedrovirus bro proteins. *J. Virol*. **74**, 6784-6789.

Zhang H, Kuang W, Chen C, Shang Y, Ma X, Deng F, Wang H, Wang M, and Hu Z (2020): Per os infectivity factor 5 identified as a substrate of p33 in the baculoviral disulfide bond formation pathway. *J. Virol*. **94**, e00615-20.

Zhang J, Dong ZQ, Zhang CD, He Q, Chen XM, Cao MY, Li HQ, Xiao WF, Lu C, and Pan MH (2014): Identification of a novel nuclear localization signal of baculovirus late expression factor 11. *Virus Res*. **184**, 111-119.

Zhang JJ, Feng M, Fan Y, Xu WF, Zheng Q, and Wu XF (2018): Networks of protein-protein interactions among structural proteins of budded virus of *Bombyx mori* nucleopolyhedrovirus. *Virology* **518**, 163-171.

Zheng Q, Shen YW, Kon XS, Zhang JJ, Feng M, and Wu XF (2017): Protein-protein interactions of the baculovirus per os infectivity factors (pifs) in the pif complex. *J. Gen. Virol*. **98**, 853-861.

Table S3. Distribution of protein homologus among 76 baculoviruses

No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ID of protein homologue		AC6 LEF2	AC14 LEF1	AC22 PIF2	AC40 P47	AC50 LEF8	AC53	AC54 VP1054	AC62 LEF9	AC65 DNA POL	AC66 Desmoplakin	AC68 PIF6	AC77 VLF-1	AC78	AC80 GP41	AC81	AC83 PIF8
Distribution[#]		(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)
Alphabaculovirus	AcMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BmNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BomaNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CapoNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CoveNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CfDEFMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CfMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChmuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChroNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	DapuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EppoNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HycuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LoobMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MaviNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OxocNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PlxyMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ThorMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AdhoNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AdorNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgipMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgseNPV-A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgseNPV-B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AnpeNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BusuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChchNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChinNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EcobNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EupsNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HearNPV-C1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HearNPV-G4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HespNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LafiNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LdMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LeseNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LyxyMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MabrMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MacoNPV-A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MacoNPV-B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ManeNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MyunNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OpMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OpbuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OrleNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PeluSNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PespNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SeMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SfMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SpliMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SpltMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SujuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	TnSNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	UrprNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Betabaculovirus	AdorGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChocGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ClanGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ClasGV-A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ClasGV-B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CnmeGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CpGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CrleGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	DisaGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EpapGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ErelGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PrGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HearGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MolaGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MyunGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PxGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SfGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SpliGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	XcGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gammabaculovirus	NeabNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	NeleNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	NeseNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Deltabaculovirus	CuniNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
No. of homologues		76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
Strain occupancy		76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76

No.		17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
ID of protein homologue		AC89 VP39	AC90 LEF4	AC92 P33	AC93 P18	AC94 ODV-E25	AC95 Helicase	AC96 PIF4	AC98 38K	AC99 LEF5	AC100 P6.9	AC101 ODV/BV-C42	AC103 P48	AC109 ODV-EC43	AC110 PIF7	AC115 PIF3	AC119 PIF1
Distribution[#]		(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)
	AcMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BmNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BomaNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CapoNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CoveNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CfDEFMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CfMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChmuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChroNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	DapuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EppoNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HycuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LoobMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MaviNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OxocNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PlxyMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ThorMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AdhoNPV	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1
	AdorNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgipMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgseNPV-A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgseNPV-B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AnpeNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BusuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChchNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Alphabaculovirus	ChinNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EcobNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EupsNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HearNPV-C1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HearNPV-G4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HespNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LafiNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LdMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LeseNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LyxyMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MabrMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MacoNPV-A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MacoNPV-B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ManeNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MyunNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OpMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OpbuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OrleNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PeluSNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PespNPV	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1
	SeMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SfMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SpliMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SpltMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SujuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	TnSNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	UrprNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AdorGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChocGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ClanGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ClasGV-A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ClasGV-B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CnmeGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CpGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CrleGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	DisaGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Betabaculovirus	EpapGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ErelGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PrGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HearGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MolaGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MyunGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PxGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SfGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SpliGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	XcGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	NeabNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gammabaculovirus	NeleNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	NeseNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Deltabaculovirus	CuniNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
No. of homologues		76	77	76	76	76	76	76	76	76	76	76	76	78	76	76	76
Strain occupancy		76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76

No.		33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
ID of protein homologue		AC133 ALK-EXO	AC138 P74 (PIF0)	AC142 49K	AC143 ODV-E18	AC144 ODV-EC27	AC148 PIF5	AC8 POLH	AC25 DBP	AC37 LEF11	AC61 FP25K	AC75	AC76	AC106/AC107	AC108 PIF9	AC131 PEP	AC145/AC150
Distribution[#]		(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ, δ)	(α, β, γ)	(α, β, γ)	(α, β, γ)	(α, β, γ)	(α, β, γ)	(α, β, γ)	(α, β, γ)	(α, β, γ)	(α, β, γ)	(α, β, γ)
Alphabaculovirus	AcMNPV	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	2
	AgMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	BmNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	BomaNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	CapoNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	CoveNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	CfDEFMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	CfMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChmuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChroNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	DapuNPV	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	2
	EppoNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HycuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LoobMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MaviNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	OxocNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	PlxyMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	ThorMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	AdhoNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AdorNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgipMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	AgseNPV-A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	AgseNPV-B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	AnpeNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	AgseNPV-B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	AnpeNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	BusuNPV	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2
	ChchNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChinNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EcobNPV	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2
	EupsNPV	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2
	HearNPV-C1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	HearNPV-G4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	HespNPV	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2
	LafiNPV	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2
	LdMNPV	1	1	1	1	1	1	1	2	1	2	1	1	1	1	1	2
	LeseNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
	LyxyMNPV	1	1	1	1	2	1	1	2	1	1	2	1	1	1	1	2
	MabrMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5
	MacoNPV-A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5
	MacoNPV-B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5
	ManeNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	MyunNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	OpMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	OpbuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	OrleNPV	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2
	PeluSNPV	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2
	PespNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	SeMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	SfMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	SpliMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
	SpltMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
	SujuNPV	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2
	TnSNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	UrprNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Betabaculovirus	AdorGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	ChocGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	ClanGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3
	ClasGV-A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3
	ClasGV-B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3
	CnmeGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3
	CpGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3
	CrleGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	DisaGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3
	EpapGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	ErelGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3
	PrGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	HearGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	5
	MolaGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3
	MyunGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	6
	PxGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3
	SfGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	4
	SpliGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3
	XcGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	5
Gammabaculovirus	NeabNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	NeleNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	NeseNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Deltabaculovirus	CuniNPV	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
No. of homologues		76	76	76	76	78	76	75	85	75	76	76	75	76	75	94	173
Strain occupancy		76	76	76	76	76	76	75	75	75	75	75	75	75	75	75	75

No.		49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
ID of protein homologue		AC27/AC71 IAPs	AC23 F protein	AC9 P78/83	AC10 PK1	AC13	AC28 LEF6	AC35 V-Ubi	AC36 PP31	AC38	AC53a LEF10	AC67 LEF3	AC82 TLP	AC102 P12	AC129 P24	AC139 ME53	AC146
Distribution[#]		(α, β, γ)	(α, β, δ)	(α, β)	(α, β)	(α, β)	(α, β)	(α, β)	(α, β)	(α, β)	(α, β)	(α, β)	(α, β)	(α, β)	(α, β)	(α, β)	(α, β)
Alphabaculovirus	AcMNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgMNPV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BmNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BomaNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CapoNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CoveNPV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CfDEFMNPV	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CfMNPV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChmuNPV	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChroNPV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	DapuNPV	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EppoNPV	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HycuNPV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LoobMNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MaviNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OxocNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PlxyMNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ThorMNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AdhoNPV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AdorNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgipMNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgseNPV-A	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgseNPV-B	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AnpeNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BusuNPV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChchNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChinNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EcobNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EupsNPV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HearNPV-C1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HearNPV-G4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HespNPV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LafiNPV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LdMNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LeseNPV	2	1	1	1	1	1	1*	1	1	1	1	1	1	1	1	1
	LyxyMNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MabrMNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MacoNPV-A	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MacoNPV-B	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ManeNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MyunNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OpMNPV	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OpbuNPV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OrleNPV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PeluSNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PespNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SeMNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SfMNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SpliMNPV	1	1	1	1	1	1	1*	1	1	1	1	1	1	1	1	1
	SpltMNPV	1	1	1	1	1	1	1*	1	1	1	1	1	1	1	1	1
	SujuNPV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	TnSNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	UrprNPV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Betabaculovirus	AdorGV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChocGV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ClanGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ClasGV-A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ClasGV-B	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CnmeGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CpGV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CrleGV	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	DisaGV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EpapGV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ErelGV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PrGV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HearGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MolaGV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MyunGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PxGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SfGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	SpliGV	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	XcGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gammabaculovirus	NeabNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		161	73	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Strain occupancy		75	73	72	72	72	72	72	72	72	72	72	72	72	72	72	72

No.		65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
ID of protein homologue		AC147-0 IE0/AC147 IE1	AC137 P10	AC141 EXON0	AC15 EGT	AC29	AC18	AC19	AC34	AC55	AC104 VP80	AC16 BV/ODV-E26	AC17	AC20/AC21 ARIF-1	AC24 PKIP	AC41 LEF12	AC51 BJDP
Distribution[#]		(α, β)	(α, β-)	(α, β-)	(α, β-)	(α, β-)	(α)	(α)	(α)	(α)	(α)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)
	AcMNPV	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1
	AgMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BmNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BomaNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CapoNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CoveNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CfDEFMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CfMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChmuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ChroNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	DapuNPV	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1
	EppoNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	HycuNPV	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1
	LoobMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	MaviNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OxocNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PlxyMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ThorMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AdhoNPV	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1
	AdorNPV	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1
	AgipMNPV	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1
	AgseNPV-A	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1
	AgseNPV-B	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1
	AnpeNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BusuNPV	1	1	1	1	1	1	1	1	1	1	0	1	0	1	0	1
	ChchNPV	1	2	1	1	1	1	1	1	1	1	0	0	1	1	0	1
Alphabaculovirus	ChinNPV	1	2	1	1	1	1	1	1	1	1	0	0	1	1	0	1
	EcobNPV	1	1	1	1	1	1	1	1	1	1	0	1	0	1	0	1
	EupsNPV	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1
	HearNPV-C1	1	2	1	1	1	0	1	1	1	1	0	1	1	1	1	1
	HearNPV-G4	1	2	1	1	1	0	1	1	1	1	0	1	1	1	1	1
	HespNPV	1	1	2	1	1	1	1	1	1	1	0	1	0	1	1	1
	LafiNPV	1	1	2	1	1	1	1	1	1	1	0	0	1	1	1	1
	LdMNPV	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1
	LeseNPV	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
	LyxyMNPV	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1
	MabrMNPV	1	3	1	1	1	1	1	1	1	1	0	1	1	1	0	1
	MacoNPV-A	1	3	1	1	1	1	1	1	1	1	0	1	1	1	0	1
	MacoNPV-B	1	3	1	1	1	1	1	1	1	1	0	1	1	1	0	1
	ManeNPV	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1
	MyunNPV	1	2	1	1	1	1	1	1	1	1	0	1	1	1	0	1
	OpMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OpbuNPV	1	2	1	1	1	1	1	1	1	1	0	0	1	0	1	0
	OrleNPV	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1
	PeluSNPV	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1
	PespNPV	1	2	1	1	1	1	1	1	1	1	0	1	1	1	0	1
	SeMNPV	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1
	SfMNPV	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1
	SpliMNPV	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
	SpltMNPV	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
	SujuNPV	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1
	TnSNPV	2	2	1	1	1	1	1	1	1	1	0	0	1	1	0	1
	UrprNPV	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1
	AdorGV	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	1	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	CpGV	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0
	DisaGV	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	EpapGV	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0
	ErelGV	1	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0
	PrGV	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0
	HearGV	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0
	PxGV	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
	SfGV	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0
	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	74	90	65	64	70	55	53	53	53	53	21	47	43	52	36	52
No. of homologues		72	72	68	62	64	70	55	53	53	53	53	20	47	42	52	36
Strain occupancy																	

No.		81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
ID of protein homologue		AC74	AC114	AC120	AC124	AC130 GP16	AC132	AC4	AC5	AC11	AC26	AC30	AC42 GTA	AC43	AC44	AC47	AC48
Distribution[#]		(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)
Alphabaculovirus	AcMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
	BmNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
	BomaNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
	CapoNPV	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1
	CoveNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
	CfDEFMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
	CfMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
	ChmuNPV	1	1	1	1	1	1	1	0	1	0	1	1	0	1	0	1
	ChroNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
	DapuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EppoNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
	HycuNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1
	LoobMNPV	1	1	1	1	1	1	0	1	0	1	1	0	1	1	0	0
	MaviNPV	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0
	OxocNPV	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0
	PlxyMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ThorMNPV	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0
	AdhoNPV	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	1	0	1	0	2	1	0	1	0	0	1	0	0	0
	AgseNPV-A	0	0	1	0	1	0	1	1	0	1	0	0	1	0	0	0
	AgseNPV-B	0	0	1	0	1	0	1	1	0	1	0	0	1	0	0	0
	AnpeNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BusuNPV	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0
	ChinNPV	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
	EcobNPV	0	0	1	0	1	0	0	1	0	0	0	0	1	0	0	0
	EupsNPV	0	0	1	0	1	0	0	1	1	0	0	0	1	0	0	0
	HearNPV-C1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0
	HearNPV-G4	0	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0
	HespNPV	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
	LeseNPV	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0
	MabrMNPV	0	0	1	0	1	0	2	1	0	1	0	0	0	0	0	0
	MacoNPV-A	0	0	1	0	1	0	2	1	0	1	0	0	1	0	0	0
	MacoNPV-B	0	0	1	0	1	0	2	1	0	1	0	0	1	0	0	0
	ManeNPV	0	0	1	0	1	0	0	1	0	0	0	0	1	0	0	0
	MyunNPV	0	0	1	0	1	0	1	1	0	1	0	0	1	0	0	0
	OpMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	OpbuNPV	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0
	OrleNPV	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0
	PeluSNPV	0	0	1	0	1	0	0	1	1	0	0	0	1	0	0	0
	PespNPV	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0
	SeMNPV	0	0	1	0	1	0	1	1	0	1	0	0	1	1	0	0
	SfMNPV	0	0	1	0	1	0	1	1	0	1	0	0	1	0	0	0
	SpliMNPV	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0
	SpltMNPV	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0
	SujuNPV	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0
	UrprNPV	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		20	20	45	20	45	20	33	44	25	40	19	18	36	20	12	14
Strain occupancy		20	20	45	20	45	20	29	44	25	40	19	18	36	20	12	14

No.		97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
ID of protein homologue		AC49 PCNA	AC52	AC56	AC57	AC69	AC72	AC73	AC91	AC117	AC122	AC136 P26	AC151 IE2	AC152	AC7 ORF603	AC45	AC70 HCF-1
Distribution[#]		(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)
Alphabaculovirus	AcMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgMNPV	0	0	1	1	1	1	1	1	1	2	1	1	0	0	0	0
	BmNPV	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0
	BomaNPV	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0
	CapoNPV	0	1	1	1	0	1	1	1	1	1	0	1	1	0	1	0
	CoveNPV	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0
	CfDEFMNPV	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0
	CfMNPV	1	0	1	1	1	1	1	1	1	1	2	1	0	0	0	0
	ChmuNPV	1	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0
	ChroNPV	1	0	1	1	1	1	1	1	1	1	2	1	0	0	0	0
	DapuNPV	1	0	1	1	0	1	1	1	1	1	1	1	0	0	0	0
	EppoNPV	0	0	1	1	1	1	1	1	2	0	1	1	0	0	0	0
	HycuNPV	1	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0
	LoobMNPV	1	1	1	1	0	0	0	0	0	1	1	0	1	0	0	0
	MaviNPV	0	1	1	0	1	1	1	0	1	0	1	1	1	0	1	0
	OxocNPV	0	1	0	1	1	1	1	0	1	0	1	0	0	0	1	0
	PlxyMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	ThorMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
	AdhoNPV	0	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0
	AdorNPV	0	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0
	AgipMNPV	0	1	1	1	1	0	0	0	1	0	2	0	2	0	0	0
	AgseNPV-A	0	1	1	1	1	0	0	0	1	0	2	0	0	0	0	0
	AgseNPV-B	0	1	1	1	1	0	0	0	1	0	2	0	1	0	0	0
	AnpeNPV	1	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0
	BusuNPV	0	1	0	1	0	0	0	0	1	0	2	0	0	0	0	0
	ChchNPV	1	1	1	1	0	0	0	0	0	0	2	0	0	0	0	0
	ChinNPV	1	1	1	1	0	0	0	0	0	0	2	0	1	0	0	0
	EcobNPV	0	1	1	1	0	0	0	0	0	0	2	0	0	0	0	0
	EupsNPV	0	1	0	1	0	0	0	0	1	0	2	0	0	0	0	0
	HearNPV-C1	0	1	1	1	1	0	0	0	1	0	1	0	1	0	0	0
	HearNPV-G4	0	1	1	1	1	0	0	0	1	0	1	0	0	0	0	0
	HespNPV	0	1	0	1	0	0	0	0	1	0	2	0	0	0	0	0
	LafiNPV	0	1	1	1	0	0	0	0	1	0	3	0	0	0	0	0
	LdMNPV	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	LeseNPV	0	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0
	LyxyMNPV	0	2	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	MabrMNPV	0	1	1	1	1	0	0	0	1	0	2	0	0	0	0	0
	MacoNPV-A	0	1	1	1	1	0	0	0	1	0	2	0	1	0	0	0
	MacoNPV-B	0	1	1	1	1	0	0	0	1	0	2	0	0	0	0	0
	ManeNPV	0	1	0	1	0	0	0	0	0	0	2	0	0	0	0	0
	MyunNPV	0	1	1	1	1	0	0	0	1	0	2	0	0	0	0	0
	OpMNPV	1	0	1	1	0	1	1	1	1	1	1	1	0	0	0	0
	OpbuNPV	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	1	1	1	0	0	0	0	1	0	2	0	0	0	0	0
	PeluSNPV	0	0	1	1	1	0	0	0	1	0	2	0	0	0	0	0
	PespNPV	0	1	1	1	1	0	0	0	1	0	2	0	0	0	0	0
	SeMNPV	0	1	1	1	1	0	0	0	1	0	2	0	0	0	0	0
	SfMNPV	0	1	1	1	1	0	0	0	1	0	2	0	0	0	0	0
	SpliMNPV	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	1	0	1	1	0	0	0	0	0	0	0	1	0	0	0
	SujuNPV	0	1	1	1	0	0	0	0	1	0	2	0	0	0	0	0
	TnSNPV	1	1	1	1	0	0	0	0	0	0	2	0	0	0	0	0
	UrprNPV	0	1	0	1	0	0	0	0	0	0	2	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		14	42	40	50	34	19	19	17	39	18	75	18	13	3	7	3
Strain occupancy		14	41	40	50	34	19	19	17	38	17	49	18	12	3	7	3

No.		113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128
ID of protein homologue		AC85	AC116	AC118	AC121	AC123 PK2	AC149	AC154	AC97	AC140	AC32 FGF	AC58/AC59/AC60 ChaBs	AC88 CG30/AC153 PE38	AC1 PTP	AC128 GP64	AC2 BRO	AC12
Distribution[#]		(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	Species-unique	Species-unique	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)
Alphabaculovirus	AcMNPV	1	1	1	1	1	1	1	1	1	1	3	2	1	1	1	1
	AgMNPV	0	0	0	0	0	0	0	0	0	1	2	2	2	1	7	0
	BmNPV	0	1	0	1	1	1	1	0	0	1	2	2	1	1	5	0
	BomaNPV	0	1	0	1	1	1	1	0	0	1	2	2	1	1	3	0
	CapoNPV	0	0	0	0	0	1	0	0	0	0	2	2	1	1	1	1
	CoveNPV	0	0	0	0	0	0	0	0	0	1	2	2	2	1	9	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	1	2	2	2	1	4	0
	CfMNPV	0	0	0	0	0	0	0	0	0	1	2	2	2	1	3	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	1	2	2	2	1	1	0
	ChroNPV	0	0	0	0	0	0	0	0	0	1	2	2	2	1	2	0
	DapuNPV	0	0	0	0	0	0	0	0	0	1	2	2	2	1	3	1
	EppoNPV	0	0	0	0	0	0	0	0	0	1	2	2	1	1	1	0
	HycuNPV	0	0	0	0	0	0	0	0	0	1	2	2	1	1	5	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	1	2	3	1	1	1	1
	MaviNPV	0	0	0	0	0	1	1	0	0	0	2	1	1	1	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	1	2	1	1	1	0	0
	PlxyMNPV	1	1	1	1	1	1	1	0	0	1	2	2	1	1	2	1
	ThorMNPV	1	0	1	0	1	1	1	0	0	1	2	2	1	1	3	1
	AdhoNPV	0	0	0	0	0	0	0	0	0	1	2	0	0	0	4	0
	AdorNPV	0	0	0	0	0	0	0	0	0	1	2	0	0	0	3	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	1	2	1	1	0	5	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	1	2	1	1	0	4	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	1	2	1	1	0	2	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	1	2	2	2	1	2	0
	BusuNPV	0	0	0	0	0	0	0	0	0	1	3	0	0	0	3	0
	ChchNPV	0	0	0	0	0	0	0	0	0	1	2	0	1	0	4	0
	ChinNPV	0	0	0	0	0	0	0	0	0	1	2	0	1	0	2	0
	EcobNPV	0	0	0	0	0	0	0	0	0	2	2	1	0	0	2	0
	EupsNPV	0	0	0	0	0	0	0	0	0	1	2	1	0	0	2	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	1	2	1	0	0	3	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	1	2	1	0	0	3	0
	HespNPV	0	0	0	0	0	0	0	0	0	1	3	1	0	0	2	0
	LafiNPV	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	1	2	0	0	0	16	2
	LeseNPV	0	0	0	0	0	0	0	0	0	1	1	1	0	0	10	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	1	2	0	0	0	14	2
	MabrMNPV	0	0	0	0	0	0	0	0	0	1	2	1	1	0	6	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	1	2	1	1	0	8	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	1	2	1	1	0	8	0
	ManeNPV	0	0	0	0	0	0	0	0	0	1	2	1	0	0	2	1
	MyunNPV	0	0	0	0	0	0	0	0	0	1	2	1	1	0	7	0
	OpMNPV	0	0	0	0	0	0	0	0	0	1	2	2	2	1	2	1
	OpbuNPV	0	0	0	0	0	0	0	0	0	1	2	0	0	0	2	0
	OrleNPV	0	0	0	0	0	0	0	0	0	1	3	1	0	0	5	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	1	2	1	0	0	1	0
	PespNPV	0	0	0	0	0	0	0	0	0	1	1	1	0	0	6	0
	SeMNPV	0	0	0	0	0	0	0	0	0	1	2	1	1	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	1	2	1	1	0	1	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	1	2	1	0	0	1	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	1	2	1	0	0	2	0
	SujuNPV	0	0	0	0	0	0	0	0	0	1	2	2	0	0	4	1
	TnSNPV	0	0	0	0	0	0	0	0	0	1	2	0	1	0	1	0
	UrprNPV	0	0	0	0	0	0	0	0	0	1	0	1	0	0	7	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	1
	ClasGV-A	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	1
	ClasGV-B	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	1
	CnmeGV	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0
	CpGV	0	0	0	0	0	0	0	0	0	3	0	1	2	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	3	0	2	1	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
	EpapGV	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	1
	PrGV	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	3	1	0	0	0	11	0
	MolaGV	0	0	0	0	0	0	0	0	0	3	1	0	0	0	2	0
	MyunGV	0	0	0	0	0	0	0	0	0	3	1	0	0	0	5	0
	PxGV	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	3	1	0	0	0	6	0
	SpliGV	0	0	0	0	0	0	0	0	0	3	1	2	0	0	6	1
	XcGV	0	0	0	0	0	0	0	0	0	3	1	0	0	0	9	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
No. of homologues		3	4	3	4	5	7	6	1	1	106	113	70	44	21	243	19
Strain occupancy		3	4	3	4	5	7	6	1	1	69	59	48	34	21	57	17

No.		129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
ID of protein homologue		AC31 SOD	AC33 HisP	AC46 ODV-E66	AC64 GP37	AC79	AC105 HE65	AC111	AC125 LEF7	AC126 V-Chi	AC127 V-CATH	AC39 P43	AC63	AC135 P35	AC3 CTX	AC84	AC86 PNK/PNL
Distribution[#]		(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)
Alphabaculovirus	AcMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AgMNPV	1	1	1	0	1	1	1	1	0	0	0	0	0	1	0	1
	BmNPV	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0
	BomaNPV	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1
	CapoNPV	1	1	0	1	1	0	1	0	1	1	0	0	0	0	0	0
	CoveNPV	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0
	CfDEFMNPV	1	1	1	1	1	2	1	1	1	1	0	0	0	0	0	0
	CfMNPV	1	0	1	1	1	0	1	3	1	1	0	0	0	1	0	0
	ChmuNPV	1	0	1	1	1	0	1	3	1	1	0	0	0	2	0	0
	ChroNPV	1	0	1	1	1	0	1	7	1	1	0	0	0	2	0	0
	DapuNPV	1	1	1	1	1	1	0	4	1	1	0	0	0	2	0	0
	EppoNPV	0	0	1	1	1	0	1	1	1	1	0	0	0	0	0	0
	HycuNPV	1	0	1	1	1	0	1	1	1	1	0	0	0	2	0	0
	LoobMNPV	1	0	1	0	0	1	1	1	0	0	0	1	0	2	0	0
	MaviNPV	1	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0
	OxocNPV	1	0	1	1	1	0	1	0	1	1	0	0	0	1	0	0
	PlxyMNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
	ThorMNPV	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AdhoNPV	1	0	1	0	1	0	0	0	0	1	1	0	0	1	0	0
	AdorNPV	1	0	1	0	1	0	0	0	0	1	1	0	0	1	0	0
	AgipMNPV	1	1	2	1	1	1	0	0	1	1	0	0	0	0	0	0
	AgseNPV-A	1	1	1	1	0	1	0	1	1	1	0	0	0	0	1	0
	AgseNPV-B	1	1	2	1	1	1	0	0	1	1	0	0	0	0	0	0
	AnpeNPV	1	0	1	1	1	1	1	1	1	1	0	0	0	2	0	1
	BusuNPV	1	1	0	1	1	0	1	0	1	1	1	0	0	1	0	0
	ChchNPV	1	1	1	1	0	1	1	0	1	1	0	1	0	1	1	0
	ChinNPV	1	1	1	1	0	1	1	0	1	1	0	1	0	1	2	0
	EcobNPV	1	1	2	1	1	0	0	0	1	1	1	1	0	1	0	0
	EupsNPV	1	1	1	1	0	0	1	0	1	1	1	0	0	0	0	0
	HearNPV-C1	1	0	1	1	0	1	1	0	1	1	0	1	0	0	0	0
	HearNPV-G4	1	0	1	1	0	1	1	0	1	1	0	1	0	0	0	0
	HespNPV	1	1	1	1	0	0	0	0	1	1	0	0	0	1	0	0
	LafiNPV	1	1	1	1	0	0	0	0	1	1	0	1	0	0	0	0
	LdMNPV	1	1	1	1	0	0	1	0	1	1	0	1	0	2	0	0
	LeseNPV	1	1	1	1*	1	2	1	0	1	1	0	0	1	0	0	0
	LyxyMNPV	1	1	1	1	0	0	1	0	1	1	0	1	0	1	0	0
	MabrMNPV	1	1	2	1	1	1	0	0	1	1	0	0	0	1	0	0
	MacoNPV-A	1	1	2	1	1	1	0	1	1	1	0	0	0	1	0	0
	MacoNPV-B	1	1	2	1	1	1	0	0	1	1	0	0	0	1	0	0
	ManeNPV	1	2	1	1	0	0	0	0	1	1	0	0	0	0	0	0
	MyunNPV	1	1	2	1	0	0	0	2	2	1	0	0	0	0	0	0
	OpMNPV	1	1	1	1	1	0	1	1	1	1	0	0	0	2	0	0
	OpbuNPV	1	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0
	OrleNPV	1	1	2	1	1	0	0	0	1	1	0	0	0	2	0	0
	PeluSNPV	1	1	1	1	0	1	1	1	1	1	0	0	0	2	0	0
	PespNPV	1	1	1	1	1	0	0	0	1	1	0	0	0	0	1	0
	SeMNPV	1	1	2	1	0	0	0	2	1	1	0	0	0	0	0	0
	SfMNPV	1	1	2	1	0	0	0	1	1	1	0	0	0	0	0	0
	SpliMNPV	0	1	1	1*	0	0	0	0	1	1	0	0	1	0	0	0
	SpltMNPV	0	1	1	1*	0	0	0	0	1	1	0	0	1	0	0	0
	SujuNPV	1	1	0	1	1	0	1	0	1	1	1	0	0	0	0	0
	TnSNPV	1	1	1	1	0	0	1	1	1	1	0	1	0	0	1	0
	UrprNPV	1	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0
Betabaculovirus	AdorGV	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
	ClanGV	1	0	0	1	0	0	1	0	1	1	0	0	1	0	0	0
	ClasGV-A	1	0	0	1	0	0	1	0	1	1	0	0	1	0	0	0
	ClasGV-B	1	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0
	CnmeGV	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
	CpGV	1	1	1	1	1	0	0	0	1	1	0	0	0	0	0	0
	CrleGV	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0
	DisaGV	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	1	1	1	1	0	0	0	0	1	1	0	1	0	0	0	0
	ErelGV	1	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0
	PrGV	1	0	2	1	0	0	0	0	1	1	0	0	0	0	0	0
	HearGV	1	0	1	1	1	1	0	1	1	0	0	0	0	1	1	0
	MolaGV	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0
	MyunGV	1	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0
	PxGV	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	1	0	1	0	1	0	0	2	0	0	0	0	0	0	0	0
	SpliGV	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1
	XcGV	1	0	1	1	1	1	1	1	1	1	0	0	0	1	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		66	45	74	53	39	29	38	45	54	55	14	17	12	42	10	6
Strain occupancy		66	43	63	53	39	27	38	29	53	55	14	17	12	32	9	6

No.		145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
ID of protein homologue		AC112/AC113	AC134 94K	AC87 P15	CpGV ORF4	CpGV ORF33	CpGV ORF39	CpGV ORF46 MP-nase	CpGV ORF99	CpGV ORF135	CpGV ORF82	Neab5	Neab14	Neab17	Neab23	Neab24	Neab25
Distribution[#]		(α-, β-)	(α-, β-)	(α-, δ)	(β)	(β)	(β)	(β)	(β)	(β)	(β)	(γ)	(γ)	(γ)	(γ)	(γ)	(γ)
Alphabaculovirus	AcMNPV	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	MabrMNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	ChocGV	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	ClanGV	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	ClasGV-A	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	ClasGV-B	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	CnmeGV	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	CpGV	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	CrleGV	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	DisaGV	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	EpapGV	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	ErelGV	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	PrGV	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	HearGV	1	1	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	MolaGV	1	1	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	MyunGV	1	0	0	2	1	1	1	1	1	1	0	0	0	0	0	0
	PxGV	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	SfGV	1	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	SpliGV	1	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0
	XcGV	1	1	0	1	1	1	1	1	1	1	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	NeleNPV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	NeseNPV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	5	1
Deltabaculovirus	CuniNPV	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		23	16	15	20	19	19	19	19	19	19	3	3	3	3	9	3
Strain occupancy		22	16	15	19	19	19	19	19	19	19	3	3	3	3	5	3

No.		161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176
ID of protein homologue		Neab26	Neab30	Neab33	Neab37	Neab42	Neab51	Neab52	Neab56	Neab64	Neab73	Neab74	Neab75	Neab77	Neab78	Neab86	Neab89
Distribution[#]		(γ)	(γ)	(γ)	(γ)	(γ)	(γ)	(γ)	(γ)	(γ)	(γ)	(γ)	(γ)	(γ)	(γ)	(γ)	(γ)
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	NeleNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	NeseNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3
Strain occupancy		3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3

No.		177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192
ID of protein homologue		Neab90	Neab93	Nele70	Neab2/Neab29	Neab3/Neab4/Neab20/Neab80/Neab81/Neab84	Neab15/Neab18/Neab19	Neab27	Neab38	Neab91	AdhoNPV ORF9	AdhoNPV ORF44	AgipMNPV ORF69	AnpeNPV ORF2	AnpeNPV ORF3	AnpeNPV ORF11	AnpeNPV ORF30 P118
Distribution[#]		(γ)	(γ)	(γ)	(γ-)	(γ-)	(γ-)	(γ-)	(γ-)	(γ-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	EppoNPV	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	1
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
	BusuNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	1	1	1	2	6	3	1	1	1	0	0	0	0	0	0	0
	NeleNPV	1	1	1	1	2	2	1	1	1	0	0	0	0	0	0	0
	NeseNPV	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		3	3	3	3	8	5	2	2	2	3	27	6	11	2	7	10
Strain occupancy		3	3	3	2	2	2	2	2	2	3	27	6	11	2	6	10

No.		193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208
ID of protein homologue		AnpeNPV ORF32	AnpeNPV ORF130	AnpeNPV ORF143	BusuNPV ORF99	CfDEFMNPV ORF79	CfDEFNPV ORF107	CfDEFNPV ORF119	CfMNPV ORF121	CfDEFNPV ORF144	CfDEFNPV ORF145	ChchNPV ORF118 E3 ubiquitin-protein ligase	ChmuNPV ORF148	DapuNPV ORF8 P25	DapuNPV ORF129	LdNPV ORF67 HRF-1	HycuNPV ORF8 EP32
Distribution[#]		(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	1	0	0	1	0	1	1	0	1	1	1	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0
	CfDEFMNPV	1	0	1	1	1	1	1	0	1	1	0	0	0	0	0	0
	CfMNPV	1	0	0	1	0	1	1	1	0	0	0	0	0	0	0	0
	ChmuNPV	1	1	0	1	0	0	1	0	0	0	0	1	0	0	0	0
	ChroNPV	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	1	1	0	0	1	0	0	0	1	0	0	1	1	1	1	1
	EppoNPV	1	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0
	HycuNPV	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1
	LoobMNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	AnpeNPV	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	AnpeNPV	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	ChinNPV	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	EcobNPV	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	LafiNPV	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
	LeseNPV	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	ManeNPV	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	1	1	0	1	1	0	0	0	1	0	0	1	1	1	1	1
	OpbuNPV	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
	OrleNPV	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	TnSNPV	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		11	7	2	17	3	8	6	3	5	8	18	4	2	2	4	3
Strain occupancy		11	7	2	17	3	8	6	3	5	8	17	4	2	2	4	3

No.		209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224
ID of protein homologue		HycuNPV ORF87	BmNPV ORF7a	BmNPV ORF111	CapoNPV ORF76	CfDEFNPV ORF116	CfMNPV ORF89/ORF90	ChmuNPV ORF120	ChmuNPV ORF133	MaviNPV ORF108	AdhoNPV ORF6 HOAR	AdhoNPV ORF7	AdhoNPV ORF15	AdhoNPV ORF44	AdhoNPV ORF45	AdhoNPV ORF96	AdhoNPV ORF97
Distribution[#]		(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
	AdorNPV	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
	AgipMNPV	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	2	0	1	1	1	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0
	OpMNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
	OrleNPV	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		2	3	2	2	2	5	2	2	2	33	2	22	27	33	3	3
Strain occupancy		2	3	2	2	2	3	2	2	2	32	2	22	27	33	3	3

No.		225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
ID of protein homologue		AdhoNPV ORF105	AdhoNPV ORF107	AdhoNPV ORF109	AdhoNPV ORF111	AdhoNPV ORF114	AdhoNPV ORF119	AdhoNPV ORF121	AdhoNPV ORF123	AdhoNPV ORF116	AgipMNPV ORF8	AgipMNPV ORF13	AgipMNPV ORF24	AgipMNPV ORF28	AgipMNPV ORF51	AgipMNPV ORF52 RR2B	AgipMNPV ORF58
Distribution[#]		(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	AdorNPV	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	AgipMNPV	1	0	1	1	0	1	1	1	0	1	1	1	1	1	1	1
	AgseNPV-A	1	0	1	1	0	1	1	1	0	0	1	1	1	1	1	1
	AgseNPV-B	1	0	1	1	0	1	1	0	0	1	1	0	0	1	1	1
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	1	0	1	1	0	1	1	0	0	1	1	0	0	1	1	1
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	1	1	0	1	1	1	0	0	0	0	0	0	0	1
	ChchNPV	0	0	1	1	0	1	1	1	0	0	0	0	0	1	1	1
	ChinNPV	0	0	1	1	0	1	1	1	0	0	0	0	0	1	1	1
	EcobNPV	0	0	1	1	0	1	1	1	0	0	0	0	0	0	1	1
	EupsNPV	0	0	1	1	0	1	1	1	0	0	0	0	0	0	1	1
	HearNPV-C1	1	0	1	0	0	1	1	0	0	0	0	1	0	0	0	0
	HearNPV-G4	1	0	1	0	0	1	1	0	0	0	0	1	0	0	0	0
	HespNPV	1	0	1	1	0	1	1	1	0	0	0	0	0	0	1	1
	LafiNPV	0	0	1	1	0	0	1	1	0	0	0	0	0	0	1	1
	LdMNPV	0	0	1	0	0	1	1	1	0	0	0	0	0	0	1	0
	LeseNPV	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0
	LyxyMNPV	1	0	1	0	0	1	1	1	0	0	0	0	0	0	1	0
	MabrMNPV	1	0	1	1	0	1	1	1	0	0	1	0	1	1	1	1
	MacoNPV-A	1	0	1	2	0	1	1	1	0	0	1	0	1	1	1	1
	MacoNPV-B	1	0	1	1	0	1	1	1	0	0	1	0	1	1	1	1
	ManeNPV	1	0	1	0	0	1	1	0	0	0	0	0	0	1	0	0
	MyunNPV	1	0	1	1	0	1	1	1	0	0	1	0	1	1	1	1
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0
	OrleNPV	0	0	1	0	0	1	1	1	0	0	0	0	0	0	1	1
	PeluSNPV	1	0	1	1	0	1	1	1	0	0	0	0	0	0	1	0
	PespNPV	1	0	1	1	0	1	1	1	0	0	1	0	0	1	1	1
	SeMNPV	0	0	1	1	0	1	1	1	0	0	0	2	0	1	1	1
	SfMNPV	0	0	1	1	0	1	1	1	0	0	0	0	0	1	0	0
	SpliMNPV	1	0	1	0	0	1	0	1	0	0	0	1	0	0	1	0
	SpltMNPV	1	0	1	0	0	1	0	1	0	0	0	1	0	0	1	0
	SujuNPV	0	0	1	1	0	1	1	1	0	0	0	0	0	0	0	1
	TnSNPV	0	0	1	1	0	1	1	1	0	0	0	0	0	1	1	1
	UrprNPV	0	1	1	0	0	1	1	1	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		19	3	32	24	2	32	29	28	2	2	8	8	6	14	23	19
Strain occupancy		19	3	32	23	2	32	29	28	2	2	8	7	6	14	23	19

No.		241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256
ID of protein homologue		AgipMNPV ORF60	AgipMNPV ORF84	AgipMNPV ORF131	AgipMNPV ORF135	AgipMNPV ORF136	AgipMNPV ORF152	AgseNPV-B ORF17	AgseNPV-A ORF61	AgseNPV-B ORF46	AgseNPV-B ORF50	BusuNPV ORF5	ChchNPV ORF5	ChchNPV ORF6	ChchNPV ORF90	ChchNPV ORF34	ChchNPV ORF36
Distribution[#]		(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)
	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	1	1	1	1	1	1	0	0	1	1	0	0	0	0	0	0
	AgseNPV-A	1	1	1	1	1	1	0	1	1	1	0	0	0	0	0	0
	AgseNPV-B	1	1	1	1	1	1	1	0	1	1	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	ChchNPV	0	0	0	0	1	0	1	0	0	0	0	1	1	1	1	1
Alphabaculovirus	ChinNPV	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1
	EcobNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	LyxyMNPV	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	1	1	1	2	1	1	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	1	1	1	2	1	1	0	0	0	0	0	0	0	0	1	0
	MacoNPV-B	1	1	1	2	1	1	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	1	1	0	1	0	1	0	0	0	0	0	0	0	0	1	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	1	1	0	1	1	1	0	1	0	0	0	0	0	0	0	0
	SeMNPV	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	1	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	SujuNPV	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	TnSNPV	0	0	0	0	1	0	0	0	0	0	0	1	1	1	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		14	9	6	11	13	14	3	2	3	3	2	2	3	3	12	2
Strain occupancy		14	9	6	8	11	14	3	2	3	3	2	2	3	3	11	2

No.		257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272
ID of protein homologue		ChchNPV ORF103	ChchNPV ORF104	ChchNPV ORF105	ChchNPV ORF116	ChchNPV ORF117	ChchNPV ORF132	ChchNPV ORF135	ChchNPV ORF144	ChchNPV ORF149	EcobNPV ORF23	EcobNPV ORF100	EupsNPV ORF5	EupsNPV ORF116	HearNPV-C1 ORF30 EL25	HearNPV-C1 ORF34	LdMNPV ORF42
Distribution[#]		(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
	ChchNPV	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	ChinNPV	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0
	HespNPV	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
	LeseNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
	MyunNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	TnSNPV	1	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		3	3	2	3	3	3	3	2	2	15	15	2	3	3	3	3
Strain occupancy		3	3	2	3	3	3	3	2	2	15	15	2	3	3	3	3

No.		273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288
ID of protein homologue		LdMNPV ORF144	LeseNPV ORF25	LeseNPV ORF125	LeseNPV ORF156	MabrMNPV ORF5	MabrMNPV ORF56	MabrMNPV ORF110	HearNPV-C1 ORF6	HearNPV-C1 ORF29	HearNPV-C1 ORF99	HearNPV-C1 ORF102	HearNPV-C1 ORF108	HearNPV-C1 ORF115a	HearNPV-C1 ORF122	HearNPV-C1 ORF125	HearNPV-C1 ORF135
Distribution[#]		(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
	HearNPV-G4	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
	ManeNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2
Strain occupancy		3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2

No.		289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304
ID of protein homologue		HearNPV-C1 ORF51	HearNPV-C1 ORF104	HearNPV-C1 ORF18	HearNPV-C1 ORF40	HearNPV-C1 ORF7	LdMNPV ORF5	LdMNPV ORF9	LdMNPV ORF11	LdMNPV ORF12	LdMNPV ORF24	LdMNPV ORF25	LdMNPV ORF28	LdMNPV ORF34	LdMNPV ORF152	LdMNPV ORF163	MacoNPV-A ORF23
Distribution[#]		(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)
	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alphabaculovirus	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	1	1	1	1	0	1	1	1	1	1	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Strain occupancy		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

No.		305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
ID of protein homologue		ManeNPV ORF131	SpliMNPV ORF6	SpliMNPV ORF21	SpliMNPV ORF37	SpliMNPV ORF39	SpliMNPV ORF56	SpliMNPV ORF64	SpliMNPV ORF65	SpliMNPV ORF100	SpliMNPV ORF129	SpliMNPV ORF130	SpliMNPV ORF132	MyunNPV ORF7	OrleNPV ORF46	TnSNPV ORF36	CpGV ORF120 DNA-ligase
Distribution[#]		(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-)	(α-, β-)
	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alphabaculovirus	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
	PeluSNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	SpliMNPV	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
	SpltMNPV	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Betabaculovirus	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	24
Strain occupancy		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	24

No.		321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336
ID of protein homologue		CfDEFNPV ORF110	AgipMNPV ORF65	XcGV ORF66	AgipMNPV ORF64	AdorGV ORF102	AdhoNPV ORF87 P13	AdorGV ORF108 Helicase-2	CpGV ORF100	XcGV ORF114	AdorGV ORF40	AnpeNPV ORF125 P22.2	CpGV ORF128 RR2A	AgipMNPV ORF82	ChchNPV ORF113	ChmuNPV ORF10	ChmuNPV ORF120
Distribution[#]		(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
	CfDEFMNPV	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
	ChroNPV	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1
	DapuNPV	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0
	EppoNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	HycuNPV	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
	LoobMNPV	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
	AgipMNPV	0	1	0	1	1	1	0	0	0	0	0	0	1	0	0	0
	AgseNPV-A	0	0	0	1	1	1	0	0	0	0	0	0	3	0	0	0
	AgseNPV-B	0	1	0	1	1	1	0	0	0	0	0	0	2	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	1	1	1	0	0	0	0	0	0	0	1	0	0
	ChinNPV	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
	HearNPV-C1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	1	1	2	0	0	0	1	1	0	0	0	0	0	0
	LafiNPV	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0
	LdMNPV	0	0	0	1	0	0	1	0	0	0	0	1	2	0	0	0
	LeseNPV	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	1	0	0	1	0	0	0	0	0	2	0	0	0
	MabrMNPV	0	0	0	1	1	1	1	0	0	0	0	0	1	0	0	0
	MacoNPV-A	0	0	0	1	1	1	0	0	0	0	0	0	1	0	0	0
	MacoNPV-B	0	0	0	1	1	1	1	0	0	0	0	0	1	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
	MyunNPV	0	1	0	1	1	1	0	0	0	0	0	0	1	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
	OpbuNPV	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0
	OrleNPV	0	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0
	PeluSNPV	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0
	PespNPV	0	2	0	1	1	1	1	0	0	0	0	0	1	0	0	0
	SeMNPV	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0
	ChocGV	0	0	0	0	1	1	1	1	0	1	0	0	0	0	1	0
	ClanGV	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	1	1	1	0	1	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	CpGV	1	2	0	0	1	1	1	1	0	0	0	1	0	0	0	0
	CrleGV	1	0	1	0	1	1	1	1	0	1	0	0	0	0	0	0
	DisaGV	0	0	0	1	0	1	1	1	0	0	0	1	0	0	0	0
	EpapGV	0	0	0	1	1	1	1	1	0	0	0	1	0	0	0	1
	ErelGV	0	0	0	0	0	1	1	1	0	2	0	0	0	0	0	0
	PrGV	1	0	0	0	1	1	1	1	0	0	1	0	0	0	0	0
	HearGV	1	0	1	0	1	1	1	1	1	0	0	0	4	0	0	0
	MolaGV	0	0	0	0	0	1	1	1	1	0	0	0	3	0	0	0
	MyunGV	1	1	0	1	0	1	1	1	1	0	0	0	3	0	0	0
	PxGV	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	SfGV	1	0	0	1	0	1	1	1	1	0	0	0	2	0	0	0
	SpliGV	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0	0
	XcGV	2	0	1	0	1	1	1	1	1	0	0	0	4	2	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		10	10	6	27	26	41	26	19	12	18	10	6	36	5	2	4
Strain occupancy		9	8	6	27	25	41	26	19	12	16	10	6	20	4	2	4

No.		337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352
ID of protein homologue		AgipMNPV ORF40	AgipMNPV ORF163 RR1	CpGV ORF40	ClanGV ORF42	ClasGV-B ORF50	ChorGV ORF11	ChorGV ORF36	DisaGV ORF54	AdhoNPV ORF3	AdhoNPV ORF115	AgipMNPV ORF26	AgipMNPV ORF20	AnpeNPV ORF145	BusuNPV ORF12	ChchNPV ORF68 Phr-1/ChchNPV ORF72 Phr-2	ChchNPV ORF109
Distribution[#]		(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	DapuNPV	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
	AgipMNPV	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
	AgseNPV-A	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	BusuNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	ChchNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	1
	ChinNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
	EcobNPV	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	1	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0
	LeseNPV	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
	MabrMNPV	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	MacoNPV-A	1	1	0	0	0	0	0	0	0	2	1	0	0	0	0	0
	MacoNPV-B	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0
	ManeNPV	1	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0
	MyunNPV	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
	OpMNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	OrleNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	SfMNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	SujuNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	TnSNPV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
	UrprNPV	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
	ClanGV	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0
	CnmeGV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	EpapGV	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	ErelGV	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	2	0	1	0	0	0	1	1
	SpliGV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
	XcGV	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		21	29	5	4	5	4	4	3	9	9	10	4	9	4	8	4
Strain occupancy		21	29	5	3	5	4	4	3	8	8	10	4	9	4	7	4

No.		353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368
ID of protein homologue		MabrMNPV ORF14 XE-1/ORF68 XE-2	MabrMNPV ORF23	MabrMNPV ORF24	SeMNPV ORF20	HearGV ORF53/ORF157	MyunGV B ORF49	XcGV ORF42	XcGV ORF57	XcGV ORF61	XcGV ORF65	CpGV ORF35	CpGV ORF42	CpGV ORF5	CpGV ORF30	CpGV ORF45	CpGV ORF50
Distribution[#]		(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(α-, β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	2	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
	MacoNPV-A	2	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
	MacoNPV-B	2	1	1	0	1	0	0	1	1	1	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	1	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
	SeMNPV	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1
	CnmeGV	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1
	CpGV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	CrleGV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	DisaGV	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1
	PrGV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	HearGV	1	0	0	0	2	0	1	1	1	1	1	1	1	1	1	1
	MolaGV	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	1
	MyunGV	0	0	0	0	0	1	1	1	0	0	1	1	1	1	1	1
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
	SfGV	0	0	1	1	0	0	1	2	0	0	0	1	1	1	1	1
	SpliGV	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
	XcGV	0	1	0	0	0	0	1	1	1	1	1	1	1	1	1	2
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		8	5	8	2	4	2	6	11	4	9	12	18	18	11	17	19
Strain occupancy		5	5	8	2	3	2	6	10	4	7	12	18	18	11	17	18

No.		369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384
ID of protein homologue		CpGV ORF62	CpGV ORF115	CpGV ORF122	CpGV ORF132	CpGV ORF121	CpGV ORF136	CpGV ORF43	CpGV ORF129/ORF130	CpGV ORF133	PxGV ORF3	XcGV ORF173	CpGV ORF28/29	HearGV ORF24	XcGV ORF124	XcGV ORF176	AdorGV ORF56
Distribution[#]		(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	1	1	0	0	1	1	1	0	1	0	1	0	0	0	1
	ChocGV	1	1	1	0	1	1	1	1	1	0	0	1	0	0	0	1
	ClanGV	1	0	1	1	1	1	1	1	1	1	0	1	0	0	0	0
	ClasGV-A	1	0	1	1	1	1	1	1	1	1	0	1	0	0	0	0
	ClasGV-B	1	1	1	0	1	1	1	1	1	1	0	1	0	0	0	1
	CnmeGV	1	1	0	1	0	1	0	1	1	0	0	1	0	0	0	1
	CpGV	1	1	1	1	1	1	1	2	1	0	0	2	0	0	0	0
	CrleGV	1	1	1	1	1	1	1	2	0	0	0	2	0	0	0	0
	DisaGV	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
	EpapGV	1	1	1	1	0	0	0	1	1	0	1	1	0	0	0	0
	ErelGV	1	1	1	0	1	1	1	1	0	1	0	1	0	0	0	1
	PrGV	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	1
	HearGV	1	1	1	1	1	0	0	0	1	0	1	0	1	1	1	0
	MolaGV	1	1	1	1	1	0	0	0	1	0	1	0	1	1	1	0
	MyunGV	1	1	1	1	1	0	0	0	1	0	1	0	1	1	1	0
	PxGV	1	1	1	1	1	1	0	1	0	1	0	0	1	1	1	0
	SfGV	1	1	1	1	1	0	0	0	0	0	1	0	1	1	1	0
	SpliGV	1	1	1	1	0	0	1	1	0	0	1	0	1	1	1	0
	XcGV	1	1	1	1	1	0	0	0	1	0	1	0	1	1	1	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		18	17	17	15	14	12	10	15	12	7	7	14	7	7	7	7
Strain occupancy		18	17	17	15	14	12	10	13	12	7	7	12	7	7	7	7

No.		385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
ID of protein homologue		ClanGV ORF67	ClanGV ORF120	ClanGV ORF10	ClanGV ORF40	ClanGV ORF53	ClanGV ORF79	ClanGV ORF93	ClasGV-B ORF24	ClasGV-B ORF63	ClasGV-B ORF93	CpGV ORF12	CpGV ORF27	CpGV ORF32	CpGV ORF44	CpGV ORF67	CpGV ORF77
Distribution[#]		(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	ChocGV	1	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1
	ClanGV	1	1	1	1	1	1	1	0	0	0	0	0	1	0	0	1
	ClasGV-A	1	1	1	1	1	1	1	0	0	0	0	0	1	0	0	1
	ClasGV-B	1	0	0	0	0	0	0	1	1	1	0	1	0	0	0	1
	CnmeGV	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	CpGV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	CrleGV	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1
	DisaGV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	ErelGV	1	1	0	0	0	0	0	1	1	1	0	1	0	0	0	1
	PrGV	1	1	0	0	0	0	0	0	0	0	1	0	1	0	0	1
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		9	4	2	2	2	2	2	2	2	3	3	4	7	2	3	11
Strain occupancy		9	4	2	2	2	2	2	2	2	3	3	4	7	2	3	11

No.		401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416
ID of protein homologue		CpGV ORF110	CpGV ORF124	CpGV ORF139	HearGV ORF104	MyunGV ORF17	PxGV ORF77	XcGV ORF4	XcGV ORF23	XcGV ORF24	XcGV ORF28	XcGV ORF33	XcGV ORF37	XcGV ORF38	XcGV ORF44	XcGV ORF70	XcGV ORF71
Distribution[#]		401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416
Alphabaculovirus	AcMNPV	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1
	MyunGV	0	0	0	1	0	0	1	1	0	1	1	0	0	1	1	1
	PxGV	0	0	0	0	1	0	1	1	1	1	1	0	1	0	0	1
	SfGV	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	1	1	1	1	0	0	1	0	0	1
	XcGV	0	0	0	0	1	1	0	0	1	1	0	0	1	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		3	11	2	2	3	2	5	5	5	6	4	2	5	3	3	5
Strain occupancy		3	11	2	2	3	2	5	5	5	6	4	2	5	3	3	5

No.		417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432
ID of protein homologue		XcGV ORF72	XcGV ORF73/ORF155/ORF161	XcGV ORF74	XcGV ORF86	XcGV ORF90	XcGV ORF106	XcGV ORF115	XcGV ORF117	XcGV ORF157	XcGV ORF162	XcGV ORF164	XcGV ORF167	XcGV ORF168	XcGV ORF177	XcGV ORF181	DisaGV ORF106/ORF107/ORF108
Distribution[#]		(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	(β-)	Species-unique
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	0
	MolaGV	1	3	0	1	1	1	1	1	0	1	0	0	0	1	1	0
	MyunGV	0	2	2	1	1	0	1	1	0	1	1	1	0	1	1	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	2	0	0	1	0	1	0	0	1	0	1	0	1	1	0
	SpliGV	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
	XcGV	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		3	14	4	5	6	3	5	4	2	6	3	4	2	5	5	3
Strain occupancy		3	5	3	5	6	3	5	4	2	6	3	4	2	5	5	1

No.		433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448
ID of protein homologue		SeMNPV ORF55/ORF96	AdhoNPV ORF85	AdhoNPV ORF90	AdhoNPV ORF93	AdorGV ORF9	AdorGV ORF15	AdorGV ORF19	AdorGV ORF20	AdorGV ORF27	AdorGV ORF30	AdorGV ORF31	AdorGV ORF35	AdorGV ORF48	AdorGV ORF52	AdorGV ORF54	AdorGV ORF55
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464
ID of protein homologue		AdorGV ORF57	AdorGV ORF116	AdorNPV ORF15	AdorNPV ORF82	AdorNPV ORF111	AgipMNPV ORF5	AgipMNPV ORF11	AgipMNPV ORF39	AgipMNPV ORF48	AgipMNPV ORF66	AgipMNPV ORF67	AgipMNPV ORF110	AgipMNPV ORF144	AgipMNPV ORF157	AgipMNPV ORF159	AgipMNPV ORF162
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
ID of protein homologue		AgMNPV ORF27	AgMNPV ORF35	AgMNPV ORF42	AgMNPV ORF58	AgMNPV ORF79	AgMNPV ORF98	AgMNPV ORF112	AgMNPV ORF132 Parp-like protein	AgMNPV ORF135	AgseNPV-A ORF5	AgseNPV-A ORF14	AgseNPV-A ORF15	AgseNPV-A ORF42	AgseNPV-A ORF43	AgseNPV-A ORF137	AgseNPV-B ORF15
Distribution[#]		Species-unique															
	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alphabaculovirus	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496
ID of protein homologue		AgseNPV-B ORF18	AgseNPV-B ORF108	AgseNPV-B ORF134	AnpeNPV ORF142	AnpeNPV ORF140	AnpeNPV ORF71	AnpeNPV ORF31	BmNPV ORF22a	BusuNPV ORF15	BusuNPV ORF47	BusuNPV ORF100	BusuNPV ORF109	BusuNPV ORF110	CapoNPV ORF5	CapoNPV ORF31	CapoNPV ORF35
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512
ID of protein homologue		CapoNPV ORF78	CapoNPV ORF106	ChchNPV ORF9	ChchNPV ORF53	ChchNPV ORF54	ChchNPV ORF120	ChchNPV ORF129	ChchNPV ORF145	ChinNPV ORF8	ChinNPV ORF54	ChmuNPV ORF7	ChmuNPV ORF34 V-trex-a	ChmuNPV ORF36	ChmuNPV ORF60	ChmuNPV ORF117	ChmuNPV ORF122
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528
ID of protein homologue		ChmuNPV ORF123	ChmuNPV ORF139 Ribokinase	ChmuNPV ORF144	ChroNPV ORF7	ChroNPV ORF8	ChroNPV ORF67	ClanGV ORF99	ClanGV ORF112	ClasGV-A ORF39	ClasGV-A ORF48	ClasGV-A ORF92	ClasGV-B ORF106	ClasGV-B ORF113	CnmeGV ORF9	CnmeGV ORF11	CnmeGV ORF20
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544
ID of protein homologue		CnmeGV ORF24	CnmeGV ORF24	CnmeGV ORF47	CnmeGV ORF48	CnmeGV ORF62	CnmeGV ORF79	CnmeGV ORF81	CnmeGV ORF84	CnmeGV ORF98	CnmeGV ORF118	CpGV ORF6	CpGV ORF21	CpGV ORF25	CpGV ORF26	CpGV ORF36	CpGV ORF38
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
ID of protein homologue		CpGV ORF51	CpGV ORF61	CpGV ORF63	CpGV ORF72	CpGV ORF78	CpGV ORF142	CrleGV ORF18	CrleGV ORF22	CrleGV ORF48	CrleGV ORF49	CuniNPV ORF2	CuniNPV ORF3	CuniNPV ORF7	CuniNPV ORF6	CuniNPV ORF9	CuniNPV ORF10
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576
ID of protein homologue		CuniNPV ORF11	CuniNPV ORF12	CuniNPV ORF16	CuniNPV ORF17	CuniNPV ORF19	CuniNPV ORF20	CuniNPV ORF27	CuniNPV ORF36	CuniNPV ORF37	CuniNPV ORF39	CuniNPV ORF40	CuniNPV ORF42	CuniNPV ORF41	CuniNPV ORF43	CuniNPV ORF44	CuniNPV ORF47
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592
ID of protein homologue		CuniNPV ORF49	CuniNPV ORF50	CuniNPV ORF52	CuniNPV ORF51	CuniNPV ORF53	CuniNPV ORF56	CuniNPV ORF57	CuniNPV ORF60	CuniNPV ORF61	CuniNPV ORF62	CuniNPV ORF64	CuniNPV ORF65	CuniNPV ORF66	CuniNPV ORF67	CuniNPV ORF68	CuniNPV ORF71
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608
ID of protein homologue		CuniNPV ORF72	CuniNPV ORF75	CuniNPV ORF76	CuniNPV ORF77	CuniNPV ORF78	CuniNPV ORF79	CuniNPV ORF80	CuniNPV ORF81	CuniNPV ORF82	CuniNPV ORF84	CuniNPV ORF83	CuniNPV ORF85	CuniNPV ORF86	CuniNPV ORF93	CuniNPV ORF94	CuniNPV ORF97
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624
ID of protein homologue		CuniNPV ORF98	CuniNPV ORF99	CuniNPV ORF100	CuniNPV ORF101	CuniNPV ORF103	CuniNPV ORF105	CuniNPV ORF107	DapuNPV ORF24	DapuNPV ORF46	DapuNPV ORF47	DapuNPV ORF56	DapuNPV ORF57	DapuNPV _ORF96	DapuNPV ORF132	DapuNPV ORF153	DisaGV ORF4
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
ID of protein homologue		DisaGV ORF13	DisaGV ORF19	DisaGV ORF20	DisaGV ORF26	DisaGV ORF27	DisaGV ORF28	DisaGV ORF33	DisaGV ORF35	DisaGV ORF38	DisaGV ORF39	DisaGV ORF43	DisaGV ORF59	DisaGV ORF66	DisaGV ORF74	DisaGV ORF80	DisaGV ORF89
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656
ID of protein homologue		DisaGV ORF101	DisaGV ORF110	DisaGV ORF112	DisaGV ORF117	EpapGV ORF4	EpapGV ORF9	EpapGV ORF12	EpapGV ORF15	EpapGV ORF16	EpapGV ORF18	EpapGV ORF19	EpapGV ORF20	EpapGV ORF23	EpapGV ORF36	EpapGV ORF43	EpapGV ORF46
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672
ID of protein homologue		EpapGV ORF49	EpapGV ORF51	EpapGV ORF60	EpapGV ORF64 Thymidylate Kinase	EpapGV ORF72	EpapGV ORF89	EpapGV ORF104	EpapGV ORF114	EpapGV ORF116	EpapGV ORF130	EppoNPV ORF113	EppoNPV ORF132	ErelGV ORF11	ErelGV ORF12	ErelGV ORF15	ErelGV ORF24
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688
ID of protein homologue		ErelGV ORF25	ErelGV ORF27	ErelGV ORF53	ErelGV ORF59	ErelGV ORF90	ErelGV ORF102	EupsNPV ORF6	EupsNPV ORF18	EupsNPV ORF19	EupsNPV ORFF23	EupsNPV ORF26	EupsNPV ORF34	EupsNPV ORF56	EupsNPV ORF58	EupsNPV ORF97	EupsNPV ORF107
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704
ID of protein homologue		EupsNPV ORF108	EupsNPV ORF123	HearGV ORF70	HearGV ORF75 Rep-like protein	HearGV ORF76 Rep-like protein	HearGV ORF111	HearGV ORF115	HearNPV-C1 ORF23	HearNPV-C1 ORF97a	HespNPV ORF7	HespNPV ORF17	HespNPV ORF18 Serpin	HespNPV ORF32	HespNPV ORF52	HespNPV ORF67	HespNPV ORF80
Distribution[#]		Species-unique															
	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alphabaculovirus	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
ID of protein homologue		HespNPV ORF108	HespNPV ORF110	HespNPV ORF112	HycuNPV ORF7	HycuNPV ORF41	HycuNPV ORF99	HycuNPV ORF100	HycuNPV ORF121	LafiNPV ORF14	LafiNPV ORF28	LafiNPV ORF31	LafiNPV ORF32	LafiNPV ORF79	LafiNPV ORF84	LafiNPV ORF87	LafiNPV ORF97
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736
ID of protein homologue		LafiNPV ORF101	LafiNPV ORF117 Transposase mut	LafiNPV ORF118	LafiNPV ORF125	LafiNPV ORF126	LafiNPV ORF133	LafiNPV ORF134	LafiNPV ORF137	LdMNPV ORF6	LdMNPV ORF8	LdMNPV ORF10	LdMNPV ORF13	LdMNPV ORF31	LdMNPV ORF49	LdMNPV ORF52	LdMNPV ORF59
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752
ID of protein homologue		LdMNPV ORF69	LdMNPV ORF121	LdMNPV ORF126	LdMNPV ORF133	LdMNPV ORF134	LeseNPV ORF4	LeseNPV ORF5	LeseNPV ORF7	LeseNPV ORF9	LeseNPV ORF10	LeseNPV ORF19	LeseNPV ORF23	LeseNPV ORF26	LeseNPV ORF28	LeseNPV ORF29	LeseNPV ORF33
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768
ID of protein homologue		LeseNPV ORF39	LeseNPV ORF45	LeseNPV ORF46	LeseNPV ORF49	LeseNPV ORF51	LeseNPV ORF56	LeseNPV ORF70	LeseNPV ORF77	LeseNPV ORF79	LeseNPV ORF85	LeseNPV ORF107	LeseNPV ORF115	LeseNPV ORF116	LeseNPV ORF118	LeseNPV ORF122	LeseNPV ORF126
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784
ID of protein homologue		LeseNPV ORF130	LeseNPV ORF132	LeseNPV ORF140	LeseNPV ORF144	LeseNPV ORF157	LeseNPV ORF161	LeseNPV ORF164	LeseNPV ORF167	LeseNPV ORF168	LeseNPV ORF169	LoobMNPV ORF4	LoobMNPV ORF6	LoobMNPV ORF12	LoobMNPV ORF38	LoobMNPV ORF55	LoobMNPV ORF59
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
ID of protein homologue		LoobMNPV ORF60	LoobMNPV ORF61	LoobMNPV ORF71	LoobMNPV ORF84	LoobMNPV ORF97	LyxyMNPV ORF11	LyxyMNPV ORF19	LyxyMNPV ORF45	LyxyMNPV ORF46	LyxyMNPV ORF130	LyxyMNPV ORF131 Gag-like protein	LyxyMNPV ORF136	MabrMNPV ORF133	MacoNPV-A ORF64	MacoNPV-B ORF17	MacoNPV-B ORF59
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816
ID of protein homologue		ManeNPV ORF4	ManeNPV ORF6	ManeNPV ORF7	ManeNPV ORF11	ManeNPV ORF63	ManeNPV ORF65	ManeNPV ORF78	ManeNPV ORF91	ManeNPV ORF99	MolaGV ORF26	MolaGV ORF62	MolaGV ORF94	MolaGV ORF119	MolaGV ORF140	MyunGV ORF25	MyunGV ORF27
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832
ID of protein homologue		MyunGV ORF55	MyunGV ORF69	MyunGV ORF97	MyunNPV ORF5	MyunNPV ORF6	MyunNPV ORF8	MyunNPV ORF40	MyunNPV ORF58	MyunNPV ORF132	NeabNPV ORF11	NeabNPV ORF22	NeabNPV ORF28	NeabNPV ORF31	NeabNPV ORF41	NeabNPV ORF46	NeabNPV ORF76
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848
ID of protein homologue		NeabNPV ORF85	NeleNPV ORF3	NeleNPV ORF10	NeleNPV ORF12	NeleNPV ORF19	NeleNPV ORF73	NeleNPV ORF79	NeleNPV ORF80	NeleNPV ORF86	NeseNPV ORF2	NeseNPV ORF4	NeseNPV ORF6	NeseNPV ORF8	NeseNPV ORF10	NeseNPV ORF13	NeseNPV ORF14
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864
ID of protein homologue		NeseNPV ORF15	NeseNPV ORF21	NeseNPV ORF27	NeseNPV ORF30	NeseNPV ORF74	NeseNPV ORF76	NeseNPV ORF82	OpbuNPV ORF4	OpbuNPV ORF5	OpbuNPV ORF14	OpbuNPV ORF19	OpbuNPV ORF33	OpbuNPV ORF36	OpbuNPV ORF43	OpbuNPV ORF48	OpbuNPV ORF53
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
ID of protein homologue		OpbuNPV ORF56	OpbuNPV ORF59	OpbuNPV ORF60	OpbuNPV ORF76	OpbuNPV ORF94	OpbuNPV ORF97	OpbuNPV ORF98	OpbuNPV ORF99	OpbuNPV ORF102	OpbuNPV ORF104	OpbuNPV ORF124	OpMNPV ORF28	OpMNPV ORF66	OrleNPV ORF1	OxocNPV ORF9	OxocNPV ORF10
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
	OpbuNPV	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896
ID of protein homologue		OxocNPV ORF27	PeluSNPV ORF4	PeluSNPV ORF6	PeluSNPV ORF7	PeluSNPV ORF10	PeluSNPV ORF17	PeluSNPV ORF18	PeluSNPV ORF35	PeluSNPV ORF48	PeluSNPV ORF54	PeluSNPV ORF55	PeluSNPV ORF89	PeluSNPV ORF99	PeluSNPV ORF100	PeluSNPV ORF101	PeluSNPV ORF110
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912
ID of protein homologue		PeluSNPV ORF119	PeluSNPV ORF120	PeluSNPV ORF140	PespNPV ORF5	PespNPV ORF20	PespNPV ORF34	PespNPV ORF76	PespNPV ORF113	PxGV ORF1	PxGV ORF5	PxGV ORF19	PxGV ORF27	PxGV ORF33	PxGV ORF39	PxGV ORF44	PxGV ORF48
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928
ID of protein homologue		PxGV ORF57	PxGV ORF58	PxGV ORF73	PxGV ORF81	PxGV ORF105	PxGV ORF111	PxGV ORF119	PlxyMNPV ORF98a	PrGV ORF9	PrGV ORF32 Phosphohydrolase	SeMNPV ORF5	SeMNPV ORF22	SeMNPV ORF39	SeMNPV ORF83	SeMNPV ORF85	SeMNPV ORF86
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944
ID of protein homologue		SfGV ORF28	SfGV ORF54	SfGV ORF98	SfGV ORF125	SfMNPV ORF5	SfMNPV ORF6	SfMNPV ORF7	SfMNPV ORF11	SfMNPV ORF32	SfMNPV ORF43	SfMNPV ORF47	SfMNPV ORF85	SfMNPV ORF129	SpliMNP V ORF5	SpliMNPV ORF131	SpltGV ORF21
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960
ID of protein homologue		SpltGV ORF28	SpltGV ORF30	SpltGV ORF44	SpltGV ORF55	SpltGV ORF65	SpltGV ORF78	SpltGV ORF91	SpltGV ORF123	SpltGV ORF132	SpltGV ORF135	SpltMNPV ORF6	SpltMNPV ORF9	SpltMNPV ORF56	SpltMNPV ORF58	SpltMNPV ORF60	SpltMNPV ORF61
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976
ID of protein homologue		SpltMNPV ORF111	SpltMNPV ORF117	SpltMNPV ORF139	SpltMNPV ORF141	SujuNPV ORF14	SujuNPV ORF25	SujuNPV ORF106	TnSNPV ORF6	TnSNPV ORF50	TnSNPV ORF51	TnSNPV ORF67	TnSNPV ORF68 Contoxin-like protein	TnSNPV ORF98	TnSNPV ORF121	TnSNPV ORF134	TnSNPV ORF137
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
	UrprNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No.		977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992
ID of protein homologue		UrprNPV ORF5	UrprNPV ORF6	UrprNPV ORF18	UrprNPV ORF23	UrprNPV ORF34	UrprNPV ORF40	UrprNPV ORF63	UrprNPV ORF118	XcGV ORF6	XcGV ORF41	XcGV ORF49	XcGV ORF69	XcGV ORF104	XcGV ORF153	XcGV ORF156	XcGV ORF163
Distribution[#]		Species-unique															
Alphabaculovirus	AcMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BmNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BomaNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CapoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CoveNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfDEFMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChmuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChroNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DapuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EppoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HycuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LoobMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MaviNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OxocNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PlxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ThorMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdhoNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AdorNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgipMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AgseNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AnpeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BusuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChchNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChinNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EcobNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EupsNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearNPV-G4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LafiNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LdMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LyxyMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MabrMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MacoNPV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ManeNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OpbuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OrleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PeluSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PespNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SeMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpltMNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SujuNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TnSNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UrprNPV	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Betabaculovirus	AdorGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ChocGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClanGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ClasGV-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CnmeGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CpGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CrleGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DisaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	EpapGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ErelGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PrGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HearGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MolaGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MyunGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PxGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SfGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SpliGV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	XcGV	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
Gammabaculovirus	NeabNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeleNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NeseNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deltabaculovirus	CuniNPV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of homologues		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strain occupancy		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

#: "-" indicates that the protein homologue is not present in all the corresponding group of baculoviruses.

The newly identified homologues in in baculoviral IRPDs were indicated as blue box.

Table S4. Distribution of homologue groups with a species occupancy ≥ 2 among baculoviruses

No.	*Alphabaculovirus*	*Betabaculovirus*	*Gammabaculovirus*	*Deltabaculovirus*	No. of homologue groups
1	++	++	++	++	38
2	++	++	++		11
3	++	++	-	++	1
4	++	++	-	-	15
5	++	+	-	-	4
6	+	++	-	-	1
7	+	+	-	-	67
8	++	-	-	-	5
9	+	-	-	++	1
10	+	-	-	-	179
11	-	++	-	-	7
12	-	+	-	-	69
13	-	-	++	-	25
14	-	-	+	-	6

Note:

++: found in all the baculoviruses among the genus.

+: found in the baculoviruses but not found in all the baculoviruses among the genus.

-: not found in any of the baculoviruses among the genus.

Table S5. Overview of functions of AcMNPV ORFs and their homologues

Identities	AcMNPV ORF	Mut & Del[a]			Function
		AcMNPV	BmNPV	HearNPV	
PTP	1	Mut (Gross and Shuman, 1998a; Li and Miller, 1995b; Takagi *et al.*, 1998), Del (Li and Guarino, 2008)	Mut (Katsuma, 2015), Del (Gomi *et al.*, 1999; Kamita *et al.*, 2005; Katsuma, 2015; Katsuma *et al.*, 2008b; Ono *et al.*, 2012)		Important but not essential for baculovirus infection by promoting viral replication (Kamita *et al*., 2005; Katsuma *et al*., 2008b; Wang *et al.*, 2016) and capable of inducing enhanced locomotory activity in a lepidopteran host (Kamita *et al*., 2005) and affecting ODV production in SF-21 but not TN-368 cell lines (Li and Miller, 1995b); exhibiting the RNA 5'-triphosphatase activity involved in RNA cap formation (Gross and Shuman, 1998a; Li and Guarino, 2008; Martins and Shuman, 2002; Takagi *et al*., 1998) and the protein tyrosine phosphatases activity (Li and Miller, 1995b; Sheng and Charbonneau, 1993) which is not required for ELA induction in BmNPV-infected B. mori larvae (Katsuma, 2015)
BRO	2		Mut (Kang *et al.*, 2006), Del (Kang *et al.*, 1999; Ono *et al*., 2012)		Important for BV production but not essential (Gomi *et al*., 1999; Ono *et al*., 2012) as a DNA binding protein (Zemskov *et al*., 2000) and nucleocytoplasmic shuttling proteins (Kang *et al*., 2006) and involved in interacting with host protein laminin (Kang *et al.*, 2003)
CTX	3	Del (Eldridge *et al.*, 1992)	Del (Ono *et al*., 2012)		Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Eldridge *et al*., 1992)
AC4	4	Del (Gandhi *et al.*, 2012)	Del (Ono *et al*., 2012; Shen *et al.*, 2018a)		Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Gandhi *et al*., 2012; Ono *et al*., 2012; Shen *et al*., 2018a)
AC5	5	Del (Wang *et al*., 2018)	Del (Ono *et al*., 2012; Shen *et al*., 2018a)		Dispensable for BV and ODV production but indispensable to the embedding of ODVs into polyhedra (Ono *et al*., 2012; Shen *et al*., 2018a; Wang *et al*., 2018) as a ODV- and OB-associated protein (Braunagel *et al.*, 2003; Wang *et al*., 2018)
LEF2	6	Mut (Merrington *et al.*, 1996), Del (Wu *et al.*, 2010)	Del (Gomi *et al.*, 1997; Ono *et al*., 2012)		Essential for DNA replication (Kool *et al.*, 1994; Lu and Miller, 1995; Wu *et al*., 2010) but not its initiation (Wu *et al*., 2010) and involved in interacting with LEF1 (Evans *et al.*, 1997)
AC7	7	Del (Gearing and Possee, 1990)			Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Gearing and Possee, 1990),
POLH	8	Mut (Lopez *et al.*, 2011; Smith *et al.*, 1983), Del (Luckow *et al.*, 1993)	Del (Maeda *et al.*, 1985; Ono *et al*., 2012)	Del (Wang *et al.*, 2003)	Dispensable for DNA and BV production (Rohrmann, 1986) but essential for ODV specific occlusion and polyhydra formation (Ji *et al.*, 2010; Lopez *et al*., 2011) as the major polyhedron protein (Ji *et al*., 2010; Rohrmann, 1986)
P78/83	9	Mut (Goley *et al.*, 2006; Ohkawa *et al.*, 2010; Wang *et al.*, 2015), Del (Wang *et al*., 2015)	Del (Ono *et al*., 2012)	Del (Wang *et al.*, 2008c)	Essential (Wang *et al.*, 2008c) and involved mediating actin-driven mobility of nucleaocapsid and actin nucleation through interaction with Arp2/3 complex and BV/ODV-C42 (Goley *et al*., 2006; Lanier and Volkman, 1998; Ohkawa et al., 2010; Ohkawa and Welch, 2018; Wang *et al*., 2015); also a component of the virus-induced RNA polymerase (Iorio *et al.*, 1998)
PK1	10	Mut (Fan *et al.*, 1996; Liang *et al.*, 2017), Del	Del (Katsuma *et al*., 2008b;		Essential (Katsuma *et al*., 2008b), associated with a very late transcription complex, and involved in LEF8 phosphorylation (Mishra *et al.*, 2008b) and regulating the hyperexpression of very late

		(Liang *et al*., 2017)	Ono *et al*., 2012)
AC11	11	Del (Tao *et al.*, 2015)	Del (Ono *et al*., 2012; Wang *et al.*, 2019a)
AC12	12	Del (Costa Navarro *et al.*, 2019)	
AC13	13	Del (Chen *et al.*, 2021; Tong *et al*., 2021)	Del (Kokusho *et al.*, 2016; Ono *et al*., 2012)
LEF1	14	Mut (Evans *et al*., 1997; Mikhailov and Rohrmann, 2002a), Del (Evans *et al*., 1997)	Del (Ono *et al*., 2012)
EGT	15	Mut (Shikata *et al.*, 1998), Del (Flipsen *et al.*, 1995)	Del (Katsuma *et al*., 2008b; Ono *et al*., 2012)
BV/ODV-E26	16	Mut (Nie *et al.*, 2009; O'Reilly *et al.*, 1990), Del (Nie and Theilmann, 2010)	Mut (Kang *et al.*, 2005), Del (Hikida *et al.*, 2018; Katsuma *et al.*, 2012; Ono *et al*., 2012)
AC17	17	Del (Nie and Theilmann, 2010)	Del (Ono *et al*., 2012; Yang *et al.*, 2009)
AC18	18	Del (Wang *et al.*, 2007)	Del (Ono *et al*., 2012)
AC19	19	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)
ARIF-1	20/21	Mut (Dreschers *et al.*, 2001), Del (Dreschers *et al*., 2001)	Del (Kokusho *et al.*, 2015; Ono *et al*., 2012)

gene expression (Liang *et al*., 2017); may be a very late gene transcription factor (Mishra *et al.*, 2008a; Mishra *et al.*, 2007)

Important bur not essential for OB production, ODV embedding and BV infectivity *in vivo* for BmNPV (Ono *et al*., 2012; Wang *et al*., 2019a), but essential for BV production and ODV envelopment in AcMNPV as an early gene (Tao *et al*., 2015).

Dispensable for BV as a F box-like protein capable of interacting with cellular SKP1 (Costa Navarro *et al*., 2019)

Important but not essential BV production and involved in efficient nuclear egress of nucleocapsids and regulation of viral gene expression (Chen *et al*., 2021; Kokusho *et al*., 2016; Ono *et al*., 2012; Tong *et al*., 2021)

Essential for transient DNA replication (Kool *et al*., 1994; Lu and Miller, 1995) and production of both BV and ODV (Evans *et al*., 1997; Ono *et al*., 2012) and capable of interacting with LEF2 (Evans *et al*., 1997); has the DNA primase activity (Mikhailov and Rohrmann, 2002a)

Dispensable for BV and ODV (Flipsen *et al*., 1995; Katsuma *et al*., 2008b) and capable of blocking insect molting and pupation (O'Reilly and Miller, 1989) by transferring glucose from UDP-glucose to ecdysteroids (O'Reilly, 1999; O'Reilly and Miller, 1989); deletions commonly occur in cell culture (O'Reilly and Miller, 1990); deletion results in early degeneration of the malpighian tubules and increased speed of killing host (Flipsen *et al*., 1995) and affects the moulting and metamorphosis of larvae (Shikata *et al*., 1998) and tree-top disease (Han *et al.*, 2015)

Dispensable for BV and ODV (Nie and Theilmann, 2010); a protein in multiple forms, which is capable of interacting with IE0 (Nie *et al*., 2009), IE1 (Kang *et al*., 2005; Nie *et al*., 2009) and FP25K (Beniya *et al.*, 1998; Braunagel *et al*., 1999), and forming a complex with FP25K and cellular actin (Beniya *et al*., 1998) and associated with sorting motif of ODV-E66 (Saksena *et al.*, 2006); deletion results in delayed viral gene expression in BV-infected cells but not transfected cells; determines tissue tropism and virulence in host lepidopteran insects (Hikida *et al*., 2018; Katsuma *et al*., 2012)

Dispensable for BV and ODV (Nie and Theilmann, 2010; Yang *et al*., 2009) as a late protein which may interact with host proteins (An *et al.*, 2005); deletion results in delayed viral gene expression in BV-infected cells but not transfected cells

Dispensable for BV and ODV (Ono *et al*., 2012; Wang *et al*., 2007); deletion does not reduce AcMNPV infectivity in LD_{50} bioassay but results in delayed mortality in LT_{50} bioassay for *Trichoplusia ni* (Wang *et al*., 2007)

Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Ono *et al*., 2012; Tong *et al*., 2021)

Important but not essential for systemic infection (Dreschers *et al*., 2001; Kokusho *et al*., 2015; Ono *et al*., 2012) and capable of inducing early actin rearrangement (Dreschers *et al*., 2001; Roncarati and Knebel-Morsdorf, 1997)

PIF2	22	Del (Clavijo *et al.*, 2009; Ohkawa *et al.*, 2005; Peng *et al.*, 2010; Wang *et al.*, 2019b)	Del (Ono *et al*., 2012)	Del (Fang *et al.*, 2006; Song *et al.*, 2008)	*Per os* infectivity factor (Ohkawa *et al*., 2005) as a component of PIF complex (Peng *et al.*, 2012; Peng *et al*., 2010; Wang *et al*., 2019b)
F protein	23	Del (Lung *et al.*, 2003; Wang *et al.*, 2008a; Yu *et al.*, 2009)	Del (Ono *et al*., 2012; Xu *et al.*, 2019; Xu *et al.*, 2020a; Xu *et al.*, 2020b)	Mut (Long *et al.*, 2007; Tan *et al.*, 2008; Yin *et al.*, 2014), Del (Long *et al.*, 2007; Tan *et al.*, 2008; Wang *et al.*, 2008b; Wang *et al.*, 2010b; Yin *et al.*, 2014)	Essential for BV infectivity and production (Long *et al.*, 2006; Tan *et al*., 2008; Wang *et al*., 2010b) and capable of affecting ODV phenotype and OB morphogenesis in (Xu *et al*., 2019; Yu *et al*., 2009) and facilitating ODV attachment to the midgut epithelial cells (Xu *et al*., 2020a) and GP64-Mediated BV efficient infection (Xu *et al*., 2020b)
PKIP	24	Mut (McLachlin *et al.*, 1998), Del (Fan *et al.*, 1998; Lai *et al.*, 2020; Lai *et al.*, 2019)	Del (Ono *et al*., 2012)		Essential (Fan *et al*., 1998; Lai *et al*., 2020; Lai *et al*., 2019; McLachlin *et al*., 1998) and involved in the hyperphosphorylation of the viral basic protein P6.9 (Lai *et al*., 2020); interacts with and stimulate the activity viral PK and affect very late gene transcription (Fan *et al*., 1998; McLachlin *et al*., 1998);
DBP	25	Del (Guo *et al.*, 2019; Quadt *et al.*, 2007; Vanarsdall *et al.*, 2007a)	Del (Ono *et al*., 2012; Zhao *et al.*, 2016)		Essential for nucleocapsid production (Quadt *et al*., 2007; Vanarsdall *et al*., 2007a) and BV production (Guo *et al*., 2019) and involved in regulation of late gene expression (Guo *et al*., 2019; Zhao *et al*., 2016) as a ssDNA binding protein capable of both unwinding and annealing DNA (Mikhailov *et al.*, 1998; Mikhailov *et al*., 2008)
AC26	26	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012; Shen *et al.*, 2012)		Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Ono *et al*., 2012; Shen *et al*., 2012; Tong *et al*., 2021) as a late protein (Shen *et al*., 2012)
IAP1	27	Del (Griffiths *et al.*, 1999)	Del (Ono *et al*., 2012)		May be important for BV and ODV (Griffiths *et al*., 1999); involved in antiapotosis (Clem and Miller, 1994)
LEF6	28	Del (Lin and Blissard, 2002a)	Del (Ono *et al*., 2012)		Important but not essential for production of both BV and ODV (Lin and Blissard, 2002a), and involved in late gene expression (Lin and Blissard, 2002a; Passarelli and Miller, 1994a)
AC29	29	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)		Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Ono *et al*., 2012; Tong *et al*., 2021)
AC30	30		Del (Huang *et al.*, 2008; Ono *et al*., 2012)		Dispensable for BV (Huang *et al*., 2008); deletion results in delayed mortality of larvae (Huang *et al*., 2008)
SOD	31	Del (Tomalski *et al.*, 1991)	Del (Ono *et al*., 2012)		Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Ono *et al*., 2012; Tomalski *et al*., 1991)
FGF	32	Del (Detvisitsakun *et al.*, 2007)	Mut (Katsuma *et al.*, 2006a), Del (Katsuma *et al.*, 2006b; Ono *et al*., 2012)	Del (Yin *et al.*, 2016)	Dispensable for BV and ODV, but important for systematic infection (Detvisitsakun *et al*., 2007; Katsuma *et al*., 2006b; Means and Passarelli, 2010; Yin *et al*., 2016) and involved in efficient BV

AC33	33	Del (Tong *et al*., 2021)		production and stimulating host cell motility (Detvisitsakun *et al*., 2007; Lehiy *et al*., 2009)
AC34	34	Del (Cai *et al*., 2012; Mu *et al*., 2016b; Qiu *et al*., 2017)	Del (Ono *et al*., 2012)	Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Tong *et al*., 2021)
V-Ubi	35	Mut (Reilly and Guarino, 1996)	Del (Ono *et al*., 2012)	Important for BV production (Cai *et al*., 2012; Ono *et al*., 2012; Qiu *et al*., 2017; Zhang *et al*., 2019), capable of retaining and interacting with subunits of the actin-related protein 2/3 complex (Mu *et al*., 2016a; Mu *et al*., 2016b), and involved in triggering apoptosis via activation of the JNK pathway (Zhang *et al*., 2019) and enhancing heterologous gene expression (Cai *et al*., 2012)
39K/PP31	36	Mut (Broussard *et al*., 1996a; Broussard *et al*., 1996b; Yan *et al*., 2019), Del (Yamagishi *et al*., 2007)	Del (Gomi *et al*., 1997; Ono *et al*., 2012; Yan *et al*., 2019)	Not essential (Reilly and Guarino, 1996); May block destruction of viral proteins by the host degradative pathway (Haas *et al*., 1996) and confers a slight growth advantage under certain conditions (Reilly and Guarino, 1996);
LEF11	37	Del (Dong *et al*., 2017; Dong *et al*., 2015; Lin and Blissard, 2002b)	Del (Ono *et al*., 2012)	Important for late gene transcription (Gomi *et al*., 1997; Yamagishi *et al*., 2007; Yan *et al*., 2019), BV production, and abnormal formation of the virogenic stroma (Gomi *et al*., 1997) as a DNA binding protein associated with virogenic stroma (Guarino *et al*., 1992), which is stimulated by IE1 (Guarino and Summers, 1986) and required for transient DNA replication (Kool *et al*., 1994; Lu and Miller, 1995)
AC38	38	Del (Ge *et al*., 2007)	Del (Ono *et al*., 2012)	Essential for viral DNA replication and virion production (Dong *et al*., 2015; Lin and Blissard, 2002b; Ono *et al*., 2012) and capable of forming oligomers and interacting with host proteins (Dong *et al*., 2017)
P43	39	Del (Yu and Carstens, 2011)	Del (Ono *et al*., 2012)	Important for BV production as a ADP-ribose pyrophosphatase (Chen *et al*., 2013a; Ge *et al*., 2007)
P47	40	Mut (Partington *et al*., 1990)	Del (Ono *et al*., 2012)	Dispensable for BV and ODV production (Ono *et al*., 2012; Yu and Carstens, 2011)
LEF12	41	Del (Guarino *et al*., 2002)	Del (Ono *et al*., 2012)	Essential (Ono *et al*., 2012) and involved in very late gene expression (Partington *et al*., 1990) as a potential component of the virus-induced RNA polymerase (Jin *et al*., 1998)
GTA	42	Del (Tong *et al*., 2021)	Del (Katsuma *et al*., 2008a; Ono *et al*., 2012)	Dispensable for BV but beneficial the late gene expression and BV production (Guarino *et al*., 2002; Rapp *et al*., 1998)
AC43	43	Del (Tao *et al*., 2013b)	Del (Katsuma and Shimada, 2009; Ono *et al*., 2012)	Dispensable for BV (Katsuma *et al*., 2008a; Ono *et al*., 2012; Tong *et al*., 2021) and ODV but beneficial for killing infected larvae (Katsuma *et al*., 2008a)
AC44	44	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)	Dispensable for BV but for OB production (Katsuma and Shimada, 2009; Ono *et al*., 2012; Tao *et al*., 2013b), and possibly involved in efficient late and very late gene expression, the morphogenesis of occlusion body, and the assembly of virions occluded in occlusion bodies (Tao *et al*., 2013b).
AC45	45	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)	Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Ono *et al*., 2012; Tong *et al*., 2021)
				Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Ono *et al*.,

					2012; Tong *et al*., 2021); may be required for the expression of AC41 (Li *et al.*, 1999)
ODV-E66	46	Del (Xiang *et al.*, 2011b)	Del (Ono *et al*., 2012)	Del (Hou *et al.*, 2019)	Dispensable for BV replication but involved in degrading larval peritrophic membrane to facilitate baculovirus oral infection (Hou *et al*., 2019; Xiang *et al*., 2011b) as the major ODV envelope protein (Hong *et al.*, 1994) exhibting chondroitinase activities with distinct substrate specificity (Sugiura *et al.*, 2011)
AC47	47	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012; Zhang *et al.*, 2014)		Dispensable for BV (Ono *et al*., 2012; Tong *et al*., 2021; Zhang *et al*., 2014) and involved in regulating viral transcription (Zhang *et al*., 2014)
AC48	48	Del (Tong *et al*., 2021)			Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Tong *et al*., 2021)
PCNA	49	Mut (Iwahori *et al.*, 2002), Del (Iwahori *et al.*, 2004)			Dispensable for BV (Iwahori *et al*., 2002), involved in the expression of late genes and BV production (Crawford and Miller, 1988; Fu *et al*., 2018; Iwahori *et al*., 2004), and associated with OEV-EC27 and viral capsid (Belyavskyi *et al.*, 1998)
LEF8	50	Mut (Titterington *et al.*, 2003)	Del (Ioannidis *et al.*, 2016; Ono *et al*., 2012)		Essential (Ioannidis *et al*., 2016; Ono *et al*., 2012) as a potential component of the virus-induced RNA polymerase (Iorio *et al*., 1998; Jin *et al*., 1998) and containing a conserved motif of (Passarelli *et al.*, 1994) which is required for the late gene expression (Titterington *et al*., 2003)
AC51	51	Del (Qiu *et al.*, 2019; Tong *et al*., 2021)	Del (Ono *et al*., 2012; Shen *et al.*, 2018b)		Essential for nucleocapsid egress from the nucleus and BV/ODV production (Qiu *et al*., 2019; Shen *et al*., 2018b; Tong *et al*., 2021); ODV nucleocapsid and envelope protein (Wang *et al.*, 2002) as a BV-associated (Wang *et al*., 2002) proteins containing RNA recognition motif (Shen *et al*., 2018b; Wang *et al*., 2002)
AC52	52	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012; Tian *et al.*, 2009b)		Important for BV production, ODV envelopment and polyhedra formation in the nucleus (Ono *et al*., 2012; Tian *et al*., 2009b; Tong *et al*., 2021)
AC53	53	Del (Liu *et al.*, 2008)	Del (Ono *et al*., 2012)		Essential for nucleocapsid assembly and virus production but not DNA replication (Liu *et al*., 2008)
LEF10	53a	Mut (Xu *et al.*, 2016), Del (Xu *et al*., 2016)	Del (Ono *et al*., 2012; Yu *et al.*, 2013)		Essential and involved in DNA replication, RNA transcription and expression of the viral early gene (Nan *et al.*, 2019; Ono *et al*., 2012; Xu *et al*., 2016; Yu *et al*., 2013) as a prion (Nan *et al*., 2019; Xu *et al*., 2016)
VP1054	54	Del (Guan *et al*., 2016; Marek *et al.*, 2013; Olszewski and Miller, 1997a)	Del (Ono *et al*., 2012)		Essential for nucleocapsid formation and required for proper viral DNA encapsidation (Marek *et al*., 2013; Olszewski and Miller, 1997a) and capable of interacting with BV/ODV-C42 and VP80 but not VP39 (Guan *et al*., 2016)
AC55	55	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)		Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Ono *et al*., 2012; Tong *et al*., 2021)
AC56	56	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)		Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Ono *et al*., 2012; Tong *et al*., 2021)
AC57	57	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)	Del (Chen *et al.*, 2012b)	Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Chen *et al*., 2012b; Ono *et al*., 2012; Tong *et al*., 2021) as an early gene (Chen *et al*., 2012b)

AC58/59	58/59	Del (Tong *et al*., 2021)	Mut (Guo *et al.*, 2010b), Del (Ono *et al*., 2012; Zhang *et al*., 2014)	Del (Zheng *et al.*, 2011)	Dispensable for BV and ODV but involved in viral transcription (Ono *et al*., 2012; Tong *et al*., 2021; Zhang *et al*., 2014; Zheng *et al*., 2011) as a ChaB homologue, DNA-binding protein (Li *et al.*, 2006a; Li *et al.*, 2006b)
AC60	60	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)		Dispensable for BV (Ono *et al*., 2012; Tong *et al*., 2021) as a ChaB homologue, DNA-binding protein (Li *et al*., 2006a; Li *et al*., 2006b);
FP25K	61	Mut (Braunagel *et al*., 1999; Garretson *et al.*, 2016; Harrison and Summers, 1995; Kelly *et al.*, 2006), Del (Garretson et al., 2016; Li *et al.*, 2015c; Rosas-Acosta *et al.*, 2001)	Mut (Katsuma *et al.*, 1999), Del (Katsuma *et al.*, 2009b; Nakanishi *et al.*, 2010; Ono *et al*., 2012)	Mut (Lua and Reid, 2003), Del (Braunagel *et al*., 1999)	Important for BV and ODV (Braunagel *et al.*, 2009; Katsuma *et al.*, 2009b; Kelly *et al*., 2006; Rosas-Acosta *et al*., 2001) and capable of regulating responsible for the regulation of BV/ODV (Braunagel *et al*., 1999; Harrison and Summers, 1995; Li *et al*., 2015c; Wu *et al.*, 2005) and involved in ODV membrane protein transport into nucleus and interacting with host importin α-16 (Saksena *et al*., 2006), multifunctional
LEF9	62	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012; Zhang *et al.*, 2016),		Essential for BV and ODV production but not essential for viral genome replication (Ono *et al*., 2012; Zhang *et al*., 2016) (Tong *et al*., 2021); significantly affects viral gene transcription and expression (Zhang *et al*., 2016) and may be a components of the virus-induced RNA polymerase (Iorio *et al*., 1998; Jin *et al*., 1998)
AC63	63	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)		Dispensable for BV (Ono *et al*., 2012; Tong *et al*., 2021) as an early protein associated with BV envelope (Tian *et al.*, 2009a)
GP37	64	Del (Cheng *et al.*, 2001)	Del (Ono *et al*., 2012)		Dispensable for BV and ODV (Cheng *et al*., 2001) as envelope protein of both BV and ODV (Li *et al.*, 2003) capable of binding host chitin to facilitate ODVs cross host peritrophic membranes and fuse with epithelia (Liu *et al.*, 2019)
DNA POL	65	Del (Chen *et al.*, 2018; Feng and Krell, 2014; Vanarsdall *et al.*, 2005), Mut (Chen *et al*., 2018; Feng and Krell, 2014)	Del (Ono *et al*., 2012)		Essential for BV and ODV DNA replication (Chen *et al.*, 2016; Chen *et al.*, 2019; Chen *et al*., 2018; Feng and Krell, 2014; Vanarsdall *et al*., 2005)
AC66	66	Del (Ke *et al*., 2008)	Del (Katsuma *et al*., 2008b; Ono *et al*., 2012; Zhang *et al.*, 2012b)		Important for nuclear egress of nucleocapsid and BV & ODV production but not essential for AcMNPV (Ke *et al*., 2008) as a viral desmoplakin; however, the deletion of its homologue in BmNPV does not affect assembly and release of nucleocapsids, but results in non-infectious BV and defective polyhedral (Zhang *et al*., 2012b)
LEF3	67	Mut (Chen and Carstens, 2005), Del (Nie *et al.*, 2012)	Del (Ono *et al*., 2012)		Essential for DNA replication (Hang *et al.*, 1995; Li *et al.*, 1993; Mikhailov *et al.*, 2005; Mikhailov *et al.*, 2006) and virion production (Ono *et al*., 2012), as ssDNA binding protein involved in interacting with Alkaline Nuclease (Hang *et al*., 1995; Li *et al*., 1993; Mikhailov *et al*., 2005; Mikhailov *et al*., 2006), and required (Chen and Carstens, 2005; Wu and Carstens, 1998) but not essential (Nie *et al*., 2012) for helicase transport into the nuclear
PIF6	68	Del (Li *et al.*, 2011; Li *et al.*, 2008; Nie *et al*., 2012;	Del (Ono *et al*., 2012; Xu *et al.*, 2008)		*Per os* infectivity factor (Nie *et al*., 2012) as a component of PIF complex (Peng *et al*., 2012; Wang *et al*., 2019b)

		Wang *et al*., 2019b)			
AC69	69	Del (Ke *et al*., 2011; Wu and Guarino, 2003)	Del (Ono *et al*., 2012)		Essential (Ke *et al*., 2011; Wu and Guarino, 2003) with cap O-dependent methyltransferase activity (Wu and Guarino, 2003)
HCF-1	70	Mut (Wilson *et al*., 2005), Del (Lu and Miller, 1996)			Dispensable for BV as a host cell-specific factor containing a RING finger domain required for its self-association and gene repression activity (Wilson *et al*., 2005) and affecting virus replicate rate in tissue-specific manner (Lu and Miller, 1996; Tachibana *et al*., 2017)
IAP2	71	Del (Griffiths *et al*., 1999)	Del (Ono *et al*., 2012)		May be important for BV and ODV (Griffiths *et al*., 1999), involved in antiapotosis (Clem and Miller, 1994)
AC72	72	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)		Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Ono *et al*., 2012; Tong *et al*., 2021)
AC73	73	Del (Shao *et al*., 2019)	Del (Ono *et al*., 2012)		Essential for BV production in BmNPV (Ono *et al*., 2012; Tong *et al*., 2021)but not for BV/ODV production in AcMNPV (Shao *et al*., 2019)
AC74	74	Del (Tong *et al*., 2021)	Del (Guo *et al*., 2010a; Ono *et al*., 2012)		Dispensable for BV (Guo *et al*., 2010a) as a late protein localizes to both the cytoplasm and nucleus of infected cells (Du *et al*., 2006)
AC75	75	Del (Guo *et al*., 2017; Shi *et al*., 2018)	Del (Ono *et al*., 2012; Shen *et al*., 2009b)		Essential (Ono *et al*., 2012; Shen *et al*., 2009b; Shi *et al*., 2018) as a BV and ODV protein localized on nuclear membrane and in intranuclear ring zone of infected cells (Shen *et al*., 2009b) and required in nuclear egress of nucleocapsids and intranuclear microvesicle formation (Guo *et al*., 2017; Shen *et al*., 2009b; Shi *et al*., 2018)
AC76	76	Del (Hu *et al*., 2010; Zhang *et al*., 2017)	Del (Ono *et al*., 2012)		Essential for BV and ODV production as a dimeric type II integral membrane protein involved in intranuclear microvesicle formation (Hu *et al*., 2010; Wei *et al*., 2014)
VLF-1	77	Mut (Yang and Miller, 1998), Del (Li *et al*., 2005; Todd *et al*., 1996; Vanarsdall *et al*., 2006)	Del (Ono *et al*., 2012)		Essential for capsid assembly (Li *et al*., 2005; Todd *et al*., 1996; Vanarsdall *et al*., 2006) and maturation of DNA (Todd *et al*., 1996; Vanarsdall *et al*., 2006) as a DNA binding protein (Mikhailov and Rohrmann, 2002b) involved in regulation of very late gene expression (Todd *et al*., 1996; Yang and Miller, 1999); the integrase activity is not essential (Yang and Miller, 1998);
AC78	78	Del (Chen *et al*., 2015)	Del (Chen *et al*., 2015; Ono *et al*., 2012)	Del (Huang *et al*., 2014)	Important for BV (Chen *et al*., 2015; Huang *et al*., 2014; Ono *et al*., 2012), ODV formation and *per os* infection (Chen *et al*., 2015) but may be not essential (Li *et al*., 2014a; Tao *et al*., 2013a)
AC79	79	Del (Wu and Passarelli, 2012)	Del (Li *et al*., 2019a; Ono *et al*., 2012)		Important but not essential for BV production and involved in the repair of ultraviolet-induced DNA damage (Li *et al*., 2019a; Ono *et al*., 2012; Tang *et al*., 2015; Tang *et al*., 2017; Wu and Passarelli, 2012); mainly exists in mainly a tetrameric form and contains important NLS motif (Li *et al*., 2019a).
GP41	80	Mut (Li *et al*., 2018b; Olszewski and Miller, 1997b), Del (Li *et al*., 2018b)	Del (Ono *et al*., 2012)		Essential for BV and ODV and required for nucleocapsid egress from nucleus and important for BV production (Li *et al*., 2018b; Olszewski and Miller, 1997b; Ono *et al*., 2012)
AC81	81	Del (Dong *et al*., 2016)	Del (Ge *et al*., 2008; Ono *et al*., 2012; Shi *et al*., 2015)		Important for BV and ODV production (Ge *et al*., 2008; Shi *et al*., 2015) and ODV envelopment (Dong *et al*., 2016)

Telokin	82	Del (Gauthier *et al.*, 2012)	Del (Iwanaga *et al.*, 2002; Ono *et al*., 2012)		Essential for AcMNPV (Gauthier *et al*., 2012) but not essential (Iwanaga *et al*., 2002; Ono *et al*., 2012) in BmNPV as a telokin homologue(Raynes *et al*., 1994), BV-associated protein involved in entry and budding from cells (Iwanaga *et al*., 2002); Need clarification.
VP91/PIF8	83	Mut (Huang *et al.*, 2017; Zhu *et al.*, 2013), Del (Huang *et al*., 2017; Javed *et al.*, 2017; Wang *et al*., 2019b; Zhu *et al*., 2013)	Del (Ono *et al*., 2012; Xiang *et al.*, 2013)	Mut (Zhou *et al.*, 2019), Del (Zhou *et al*., 2019)	Essential for BV and ODV production and associated with both ODV envelope and nucleocapsid (Russell and Rohrmann, 1997) and involved in the interaction with IE1 for enhancing transcription(Lu *et al.*, 1998); a *per os* infectivity factor (Huang *et al*., 2017; Javed *et al*., 2017; Xiang *et al*., 2013; Zhou *et al*., 2019; Zhu *et al*., 2013) as a component of PIF complex (Peng *et al*., 2012; Wang *et al*., 2019b);
AC84	84	Del (Tong *et al*., 2021)			Dispensable for BV; deletion may have no or mild effect on BV and ODV production(Tong *et al*., 2021)
AC85	85	Del (Tong *et al*., 2021)			Dispensable for BV; deletion may have no or mild effect on BV and ODV production(Tong *et al*., 2021)
PNK/PNL	86	Del (Durantel *et al.*, 1998)			Dispensable for viral replication as an immediate early gene (Durantel *et al*., 1998)
AC87	87	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)		Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Ono *et al*., 2012; Tong *et al*., 2021)
CG30	88	Del (Passarelli and Miller, 1994b)	Mut (Ishihara *et al.*, 2013), Del (Ishihara *et al*., 2013; Ono *et al*., 2012; Zhang *et al.*, 2012a)		Important for BV (Ishihara *et al*., 2013; Ono *et al*., 2012; Passarelli and Miller, 1994b; Zhang *et al*., 2012a) and containing a Zinc Finger and a leucine zipper domain (Thiem and Miller, 1989a)
VP39	89	Mut (Katsuma and Kokusho, 2017), Del (Katsuma and Kokusho, 2017)	Del (Ono *et al*., 2012)		Essential for viral propagation (Katsuma and Kokusho, 2017) and involved in actin rearrangement and polymerization (Charlton and Volkman, 1993) as the major capsid protein (Pearson *et al.*, 1988; Thiem and Miller, 1989b) with a conserved glycine residue essential for correct nucleocapsid assembly, viral DNA packaging, and viral gene expression, especially of very late genes
LEF4	90	Mut(Martins and Shuman, 2001), Del (Knebel-Morsdorf *et al.*, 2006)	Del (Ono *et al*., 2012)		Essential for viral replication (Knebel-Morsdorf *et al*., 2006; Ono *et al*., 2012) with RNA 5'-triphosphatase and ATPase and guanylyltransferase activities (Gross and Shuman, 1998b; Guarino *et al.*, 1998; Jin *et al*., 1998; Martins and Shuman, 2001; Sehrawat *et al.*, 2002)
AC91	91	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012; Shen *et al.*, 2009a)		Dispensable for BV (Ono *et al*., 2012; Shen *et al*., 2009a; Tong *et al*., 2021)
P33	92	Del (Andersen *et al.*, 2011; Clem *et al.*, 2014; Kuang *et al.*, 2017; Wu and Passarelli, 2010)	Del (Ono *et al*., 2012)	Del (Kuang *et al.*, 2016)	Essential for efficient BV production and multiply-ODV formation (Andersen *et al*., 2011; Clem *et al*., 2014; Kuang *et al*., 2017; Kuang *et al*., 2016; Wu and Passarelli, 2010) as a flavin adenine dinucleotide-linkedsulfhydryl oxidase which enhance p53-mediated apoptosis (Prikhod'ko *et al.*, 1999b) through interacting with host P53 protein (Wu *et al.*, 2013);
AC93	93	Mut (Liu *et al.*, 2020), Del (Liu *et al*., 2020; Yuan *et al.*, 2011)	Del (Ono *et al.*, 2012)	Del (Li *et al.*, 2014b)	Essential for ODV envelopment and nuclear egress of nucleocapsids but not DNA replication (Li *et al*., 2014b; Liu *et al*., 2020; Yuan *et al*., 2011) and involved in interactions with the endosomal sorting complex required for transport (ESCRT) pathway complex (Liu *et al*., 2020; Yue *et al.*, 2018)

ODV-E25	94	Del (Chen *et al.*, 2012a; Chen *et al.*, 2013b; Luo *et al.*, 2013a), Mut (Luo *et al.*, 2013b)	Del (Ono *et al*., 2012)		Important for BV infectivity and ODV formation but not DNA replication (Chen *et al*., 2012a; Chen *et al*., 2013b; Luo *et al*., 2013a) as a both BV and ODV associated (Wang *et al.*, 2010c) protein which may exist and function as dimmers or polymers (Luo *et al*., 2013b) and may be regulated by host microRNA (Luo *et al*., 2013a)
Helicase	95	Del (Argaud *et al.*, 1998; Liu and Carstens, 1999)	Del(Ono *et al.*, 2012)		Essential with DNA and ATP binding activities (McDougal and Guarino, 2001) and involved in DNA replication (Kool *et al*., 1994; Liu and Carstens, 1999) and viral host range (Argaud *et al*., 1998; Croizier *et al.*, 1994)
PIF4	96	Del (Fang *et al.*, 2009a; Wang *et al*., 2019b)	Del (Dong *et al.*, 2014; Ono *et al*., 2012)	Del (Huang *et al.*, 2012)	*Per os* infectivity factor (Dong *et al*., 2014; Fang *et al*., 2009a; Huang *et al*., 2012) as a component of PIF complex (Dong *et al*., 2014; Huang *et al*., 2012; Peng *et al*., 2012; Wang *et al*., 2019b)
AC97	97	Del (Tong *et al*., 2021)			Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Tong *et al*., 2021)
38K	98	Mut (Lai *et al.*, 2018), Del (Lai *et al*., 2018; Wu *et al.*, 2006)	Del (Ono *et al*., 2012)		Essential for nucleocapsid assembly (Wu *et al*., 2006) and involved in late gene expression (Hefferon, 2003), specific dephosphorylation of the core protein P6.9 (Lai *et al*., 2018) and interactions with VP1054, VP39, VP80, and itself (Wu *et al.*, 2008)
LEF5	99	Mut (Chen *et al.*, 2020; Harwood *et al.*, 1998), Del (Chen *et al*., 2020; Harwood *et al*., 1998; Su *et al.*, 2011)	Del (Ono *et al*., 2012)		Essential for BV production (Ono *et al*., 2012; Su *et al*., 2011), and containing a nucleolar localization signal (NoLS) (Chen *et al*., 2020) and a zinc ribbon domain which is required for maximal late transcription activity (Harwood *et al*., 1998)
P6.9	100	Mut (Wang *et al.*, 2010a), Del (Wang *et al*., 2010a)	Del (Ono *et al*., 2012)		Essential for of BV/ODV production but not for viral DNA replication (Wang *et al*., 2010a) as a nucleocapsid core DNA-binding protein (Kelly *et al.*, 1983; Tweeten *et al.*, 1980; Wilson *et al.*, 1987; Wilson and Price, 1988) whose phosphorylation states are regulated by PKIP and 38K proteins (Lai *et al*., 2018; Lai *et al*., 2020; Li *et al.*, 2015a; Liu *et al.*, 2012)
BV/ODV-C42	101	Del (Vanarsdall *et al.*, 2007b)	Del (Ono *et al*., 2012)		Essential (Vanarsdall *et al*., 2007b), and involved in recruiting P78/83 to nucleus (Wang *et al.*, 2008d), nuclear actin polymerization (Li *et al.*, 2010) and nucleocapsid morphogenesis (Vanarsdall *et al*., 2007b)
P12	102	Mut (Gandhi *et al*., 2012), Del (Gandhi *et al*., 2012)	Del (Ono *et al*., 2012)		Essential for BV production (Gandhi *et al*., 2012; Ono *et al*., 2012) and mediating nuclear localization of G-Actin (Gandhi *et al*., 2012; Hepp *et al*., 2018) through modulating BV/ODV-C42 ubiquitination (Zhang *et al.*, 2018)
P48	103	Del (Wang *et al.*, 2019c; Yuan *et al*., 2008)	Del (Ono *et al*., 2012)		Important for BV production, intranuclear microvesicle and ODV envelopment (Ono *et al*., 2012; Wang *et al*., 2019c; Yuan *et al*., 2008)
VP80	104	Del (Marek *et al.*, 2011)	Del (Ono *et al*., 2012; Tang *et al.*, 2008)		Essential for BV production, nucleocapsid maturation but not for assembly of nucleocapsids (Marek *et al*., 2011; Tang *et al*., 2008)
HE65	105	Del (Gandhi *et al*., 2012)	Del (Ono *et al*., 2012)		Not essential and deletion may have no or mild effect on BV and ODV production (Gandhi *et al*., 2012; Ono *et al*., 2012) as an early gene (Becker and Knebel-Morsdorf, 1993) transcriptionally actiated by IE1 (Kremer and Knebel-Morsdorf, 1998)

AC106/107	106/107	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)		Essential for BV production (Ono *et al*., 2012) (Tong *et al*., 2021)
PIF9	108	Del (Boogaard *et al*., 2019; Wang *et al*., 2019b)	Del (Ono *et al*., 2012; Tang *et al*., 2013)		*Per os* infectivity factor (Boogaard *et al*., 2019; Simon *et al*., 2012; Tang *et al*., 2013) as a component of PIF complex (Boogaard *et al*., 2019; Wang *et al*., 2019b)
ODV-EC43	109	Del (Alfonso *et al*., 2017; Alfonso *et al*., 2012; Fang *et al*., 2009c; Lehiy *et al*., 2013; Lin *et al*., 2009)	Del (Ono *et al*., 2012)		Essential for nucleocapsid formation but not viral DNA replication (Fang *et al*., 2009c; Lin *et al*., 2009), involved in nucleocapsid transport and envelopment in infected cell (Alfonso *et al*., 2012; Lehiy *et al*., 2013); may be tegument protein (Fang *et al*., 2003)
PIF7	110	Del (Jiantao *et al*., 2016; Wang *et al*., 2019b)	Del (Ono *et al*., 2012)		Essential for *per os* infectivity factor (Jiantao *et al*., 2016) as a component of PIF complex (Wang *et al*., 2019b)
AC111	111	Del (Li *et al*., 2018a)	Del (Ono *et al*., 2012)		Dispensable for BV and ODV; affects *per os* infectivity in a host-dependent manner (Li *et al*., 2018a; Ono *et al*., 2012; Tong *et al*., 2021)
AC112/113	112/113	Del (Tong *et al*., 2021)			Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Tong *et al*., 2021)
AC114	114	Del (Wei *et al*., 2012)	Del (Ono *et al*., 2012)		Not essential for BV and ODV production (Ono *et al*., 2012; Wei *et al*., 2012) as a late gene, which distributed both in the cytoplasm and in the nucleus also a component of BmNPV ODV (Liang *et al*., 2010);
PIF3	115	Del (Ohkawa *et al*., 2005; Peng *et al*., 2010; Wang *et al*., 2019b)	Del (Ono *et al*., 2012)	Del (Song *et al*., 2008)	Essential for *per os* infectivity factor (Ohkawa *et al*., 2005) as a component of PIF complex (Peng *et al*., 2012; Peng *et al*., 2010; Wang *et al*., 2019b)
AC116	116	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)		Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Ono *et al*., 2012; Tong *et al*., 2021)
AC117	117	Del (Tong *et al*., 2021)	Del (Gomi *et al*., 1999; Ono *et al*., 2012)		Dispensable for BV and ODV (Gomi *et al*., 1999; Ono *et al*., 2012; Tong *et al*., 2021); deletion has a slight effect on the motility of infected larvae (Gomi *et al*., 1999)
AC118	118	Del (Tong *et al*., 2021)			Dispensable for BV; deletion may have mild effect on BV and ODV production (Tong *et al*., 2021)
PIF1	119	Del (Clavijo *et al*., 2009; Ohkawa *et al*., 2005; Peng *et al*., 2010; Wang *et al*., 2019b)	Del (Ono *et al*., 2012)	Del (Song *et al*., 2008)	Essential for *per os* infectivity factor (Harrison *et al*., 2010; Ohkawa *et al*., 2005; Sparks *et al*., 2011; Xiang *et al*., 2011a) as a component of PIF complex (Peng *et al*., 2012; Peng *et al*., 2010; Wang *et al*., 2019b)
AC120	120	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)		Dispensable for BV; deletion may have mild effect on BV and ODV production (Ono *et al*., 2012; Tong *et al*., 2021)
AC121	121	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)		Dispensable for BV; deletion may have mild effect on BV and ODV production (Ono *et al*., 2012; Tong *et al*., 2021); a transcriptional activator of some early genes, including IE1 and PP31, but not late genes (Li *et al*., 1999) (Tong *et al*., 2021)
AC122	122	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)		Dispensable for BV; deletion may have mild effect on BV and ODV production (Ono *et al*., 2012; Tong *et al*., 2021)

PK2	123	Mut (Li and Miller, 1995a), Del (Dever *et al.*, 1998)	Del (Katsuma *et al.*, 2008b; Ono *et al*., 2012)	Dispensable for BV (Dever *et al*., 1998; Katsuma *et al*., 2008b; Ono *et al*., 2012) but involved in interaction with and regulating eIF2α family kinases for inactivating a host stress response to virus infection (Dever *et al*., 1998; Li *et al.*, 2015b)
AC124	124	Del (Fang *et al.*, 2019)	Del (Chen *et al.*, 2014; Gomi *et al*., 1999; Ono *et al*., 2012)	Dispensable for BV (Fang *et al*., 2019; Ono *et al*., 2012) but in conflict with other study on Bm101 (Chen *et al*., 2014) and involved in regulating the expression of chitinase gene (Fang *et al*., 2019).
LEF7	125	Del (Chen and Thiem, 1997; Mitchell *et al.*, 2013)	Del (Gomi *et al*., 1999; Gomi *et al*., 1997; Ono *et al*., 2012)	Dispensable for BV, involved in transient DNA replication and capable of suppressing DNA damage response to enhance virus multiplication (Chen and Thiem, 1997; Gomi *et al*., 1999; Lu and Miller, 1995; Mitchell *et al*., 2013; Morris *et al.*, 1994)
V-ChiA	126	Mut (Hodgson *et al.*, 2011; Saville *et al.*, 2004; Saville *et al.*, 2002) , Del (Hawtin *et al.*, 1997)	Mut (Daimon *et al.*, 2007), Del (Gomi *et al*., 1999; Katsuma *et al*., 2008b; Ono *et al*., 2012)	Dispensable for BV and ODV production but crucial for V-CATH processing (Daimon *et al*., 2007; Hom and Volkman, 2000) and the liquefaction of infected larvae (Daimon *et al*., 2007; Hawtin *et al*., 1997), with the interaction with V-CATH (Hodgson *et al*., 2011)
V-CATH	127	Del (Hawtin *et al*., 1997)	Mut (Katsuma *et al.*, 2009a), Del (Ono *et al*., 2012)	Dispensable for BV and ODV production but important for the liquefaction of infected larvae and viral horizontal transmission (D'Amico *et al.*, 2013; Hawtin *et al*., 1997) with the interaction with V-ChiA (Hodgson *et al*., 2011) and involvement in actin proteolysis (Lanier *et al.*, 1996);
GP64	128	Mut (Jarvis *et al.*, 1998; Li and Blissard, 2008; Li and Blissard, 2009a; Li and Blissard, 2009b; Li and Blissard, 2010; Monsma and Blissard, 1995; Zhang *et al.*, 2003; Zhou and Blissard, 2008), Del (Li and Blissard, 2010; Monsma *et al.*, 1996)	Del (Ono *et al*., 2012)	Essential for cell-cell transmission as a BV major envelope fusion protein capable of interacting with host cholesterol transport protein (Kingsley *et al.*, 1999; Li *et al.*, 2019b; Monsma *et al*., 1996; Whitford *et al.*, 1989)
P24	129	Mut (Schetter *et al.*, 1990)	Del (Gomi *et al*., 1999; Ono *et al*., 2012)	Dispensable for BV and ODV (Gombart *et al.*, 1989; Gomi *et al*., 1999; Schetter *et al*., 1990); affects pathogenesis in larvae specifically (Gomi *et al*., 1999)
GP16	130	Del (Yang *et al.*, 2014a)	Del (Ono *et al*., 2012)	Dispensable for BV (Ono *et al*., 2012; Yang *et al*., 2014a) as a glycosylated protein localized near the nuclear membrane in the cytoplasm involved in membrane trafficking of BV (Gross *et al.*, 1993; Yang *et al*., 2014a)
PEP	131	Del (Bischoff and Slavicek, 1999)	Del (Ono *et al*., 2012)	Dispensable for polyhedral potency and BV production (Bischoff and Slavicek, 1999) as the major polyhedron membrane protein (Gross *et al.*, 1994; Whitt and Manning, 1988) which facilitates larval liquefaction and lysis of cultured cell (Bischoff and Slavicek, 1999)
AC132	132	Del (Fang *et al.*, 2016; Yang *et al.*, 2014b)	Del (Ono *et al*., 2012)	Essential for BV production, nuclear entry of nucleocapsid and multiply enveloped ODV morphogenesis (Fang *et al*., 2016; Ono *et al*., 2012; Yang *et al*., 2014b)
ALK-EXO	133	Mut (Li and Rohrmann, 2000), Del (Okano *et al.*,	Del (Ono *et al*., 2012)	Essential as baculovirus alkaline nuclease (Li and Rohrmann, 2000; Okano *et al*., 2004) involved in the maturation of viral DNA or packaging of the DNA into virions (Okano *et al*., 2004; Okano *et*

		2004; Okano *et al*., 2007)			*al*., 2007),
94K	134	Del (Clem *et al*., 1994)	Del (Ono *et al*., 2012)		Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Clem *et al*., 1994; Ono *et al*., 2012)
35K/P35	135	Mut (Kelly *et al*., 2006), Del (Clem and Miller, 1993; Clem *et al*., 1994)	Del (Makino *et al*., 2018; Ono *et al*., 2012)		Essential for antiapotosis in semi-permissive cells, beneficial for BV production (Bertin *et al*., 1996; Clem and Miller, 1993; Clem and Miller, 1994; LaCount *et al*., 2000; Makino *et al*., 2018; Miao *et al*., 2016; Zoog *et al*., 1999) and capable of suppressing host RNA interference antiviral response (Mehrabadi *et al*., 2015)
P26	136	Del (Simon *et al*., 2008; Wang *et al*., 2009)	Del (Ono *et al*., 2012)		Dispensable for BV and auxiliary for virus transmission (Simon *et al*., 2008); may act in concert with P74 and P10 to regulate the virion occlusion process (Wang *et al*., 2009)
P10	137	Mut (Graves *et al*., 2019; Raza *et al*., 2017), Del (Graves *et al*., 2019; Raza *et al*., 2017; van Oers *et al*., 1993)	Del (Ono *et al*., 2012)		Dispensable for BV and ODV but important as phosphorylation-regulated protein involved in occlusion body maturation and their release (Carpentier *et al*., 2008; Graves *et al*., 2019; Gross *et al*., 1994; Lee *et al*., 1996; Raza *et al*., 2017; van Oers *et al*., 1993) and capable of interacting with host tubulin (Patmanidi *et al*., 2003)
P74	138	Del (Faulkner *et al*., 1997; Haas-Stapleton *et al*., 2004; Kuzio *et al*., 1989; Wang *et al*., 2019b)	Del(Ono *et al*., 2012)	Del (Song *et al*., 2008; Yao *et al*., 2004)	Essential for oral infection (Haas-Stapleton *et al*., 2004; Ohkawa *et al*., 2005; Song *et al*., 2008; Wang *et al*., 2019b) as a component of PIF complex (Peng *et al*., 2012; Peng *et al*., 2010; Wang *et al*., 2019b)
ME53	139	Mut (Liu *et al*., 2016); Del (de Jong *et al*., 2009; Xi *et al*., 2007)	Del (Ono *et al*., 2012)		Important for optimal BV and ODV production as a major early-transcribed gene containing NLS motif (de Jong *et al*., 2009; Knebel-Morsdorf *et al*., 1993; Liu *et al*., 2016; Xi *et al*., 2007), which interacts with P64 and may be providing a scaffold that bridges the viral envelope and nucleocapsid (de Jong *et al*., 2011)
AC140	140	Del (Tong *et al*., 2021)			Dispensable for BV; deletion may have no or mild effect on BV and ODV production(Tong *et al*., 2021)
EXON0	141	Del (Dai *et al*., 2004a; Fang *et al*., 2007; Fang *et al*., 2008; Fang *et al*., 2009b)	Del (Ono *et al*., 2012)		Important for efficient nuclear egress of nucleocapsid and production of BV (Dai *et al*., 2004a; Fang *et al*., 2007; Fang *et al*., 2008; Fang *et al*., 2009b) through a potential E3 ubiquitin ligase activity via interactions with viral ubiquitin and AC66 (Biswas *et al*., 2018), capable of interacting with β-tubulin (Fang *et al*., 2009b), itself and associated with BV/ODV-C42 and FP25 (Fang *et al*., 2008)
49K	142	Del (McCarthy *et al*., 2008; Vanarsdall *et al*., 2007b)	Del (Gandhi *et al*., 2012; Ono *et al*., 2012)		Essential for BV production and nucelocapsid maturation (McCarthy *et al*., 2008; Vanarsdall *et al*., 2007b; Yang *et al*., 2008) and ODV envelopment (McCarthy *et al*., 2008),
ODV-E18	143	Del (McCarthy and Theilmann, 2008)	Del (Ono *et al*., 2012)		Essential for BV production but not for DNA replication (McCarthy and Theilmann, 2008)
ODV-EC27	144	Del (Vanarsdall *et al*., 2007b)	Del (Ono *et al*., 2012)		Essential for BV production and nucleocapsid formation (Vanarsdall *et al*., 2007b) as a multifunctional viral cyclin (Belyavskyi *et al*., 1998) and capable of interacting with BV/ODV-C42 (Braunagel *et al*., 2001)

AC145	145	Del (Lapointe *et al.*, 2004)	Del (Ono *et al*., 2012)	Dispensable for BV but involved in affecting oral infectivity in a host-dependent manner (Lapointe *et al*., 2004; Ono *et al*., 2012)
AC146	146	Del (Dickison *et al.*, 2012)	Del (Ono *et al*., 2012)	Essential for BV production as a late virion associated protein (Dickison *et al*., 2012; Ono *et al*., 2012) which accumulates within the nuclear region of infected cells (Ge *et al.*, 2009)
IE1	147	Mut (Olson *et al.*, 2002), Del (Stewart *et al.*, 2005)	Del (Ono *et al*., 2012)	Essential as ie0-ie1 gene complex form (Stewart *et al*., 2005), essential for baculovirus early replication (Schultz *et al.*, 2009) and required for expression of delayed-early gene (Guarino and Summers, 1986) as a DNA binding protein (Ito *et al.*, 2004; Leisy and Rohrmann, 2000; Nagamine *et al.*, 2005; Olson *et al.*, 2003) involved in late and very late gene expression (Passarelli and Miller, 1993), initiation of viral DNA replication and assembly of viral DNA replication factories (Okano *et al.*, 1999)
IE0	147-0	Del (Lu *et al.*, 2005; Stewart *et al*., 2005)	Del (Ono *et al*., 2012)	Essential as ie0-ie1 gene complex form (Lu *et al*., 2005; Stewart *et al*., 2005) but functional for transcriptional activation (Dai *et al.*, 2004b; Huijskens *et al.*, 2004; Stewart *et al*., 2005) and viral replication (Lu *et al.*, 2003; Lu *et al*., 2005)
PIF5	148	Del (Harrison *et al*., 2010; Sparks *et al*., 2011; Wang *et al*., 2019b)	Del (Ono *et al*., 2012; Xiang *et al*., 2011a)	Essential for *per os* infectivity factor (Harrison *et al*., 2010; Sparks *et al*., 2011; Xiang *et al*., 2011a) as a component of PIF complex (Peng *et al*., 2012; Wang *et al*., 2019b) but not essential for binding and fusion of ODV to the host midgut (Sparks *et al*., 2011), and also associated with BV (Peng *et al*., 2012; Wang *et al*., 2010c)
AC149	149	Del (Tong *et al*., 2021)	Del (Ono *et al*., 2012)	Dispensable for BV; deletion may have no or mild effect on BV and ODV production (Ono *et al*., 2012; Tong *et al*., 2021)
AC150	150	Del (Lapointe *et al*., 2004; Zhang *et al*., 2005)	Del (Hao *et al.*, 2009; Huang *et al.*, 2019; Ono *et al*., 2012)	Dispensable for BV but involved in the regulation of viral gene expression (Huang *et al*., 2019) and oral infectivity in a host-dependent manner (Lapointe *et al*., 2004)
IE2	151	Mut (Prikhod'ko *et al.*, 1999a; Prikhod'ko and Miller, 1998; Tung *et al.*, 2016), Del (Tung *et al.*, 2016)	Del (Ono *et al*., 2012)	Important for BV and ODV production (Kool *et al*., 1994; Prikhod'ko *et al*., 1999a), involved in DNA replication, cell cycle arrest and stimulating the expressions of host heat shock proteins (Prikhod'ko and Miller, 1998; Tung *et al*., 2016)
AC152	152	Del (Gandhi *et al*., 2012)		Dispensable for BV but slightly affecting the kinetics of BV production (Gandhi *et al*., 2012)
PE38	153	Mut (Prikhod'ko and Miller, 1999), Del (Gandhi *et al*., 2012; Milks *et al.*, 2003)	Del (Ono *et al*., 2012)	Important for viral DNA synthesis, BV production, G-actin translocation to the nucleus and viral resistance of host (Gandhi *et al*., 2012; Gebhardt *et al.*, 2014; Milks *et al*., 2003) as a baculovirus trans activator (Wu *et al.*, 1993) which is involved in DNA replication (Kool *et al*., 1994) and augments IE1-induced apoptosis but is unable to induce apoptosis (Prikhod'ko and Miller, 1999)
AC154	154	Del (Bai *et al.*, 2020; Tong *et al*., 2021)	Del (Ono *et al*., 2012)	Dispensable for BV and ODV production (Bai *et al*., 2020; Ono *et al*., 2012; Tong *et al*., 2021); may function to be anti-apoptotic to provide a more favorable environment for progeny virus replication and packaging (Bai *et al*., 2020)

[a]: Mut: mutation; Del:Deletion, means"Knock out"; Ac: AcMNPV; Bm: BmNPV; Ha: HearNPV.

References

Alfonso V, Amalfi S, Lopez MG, and Taboga O (2017): Effects of deletion of the ac109 gene of Autographa californica nucleopolyhedrovirus on interactions with mammalian cells. *Arch. Virol*. **162**, 835-840.

Alfonso V, Maroniche GA, Reca SR, Lopez MG, del Vas M, and Taboga O (2012): AcMNPV core gene ac109 is required for budded virion transport to the nucleus and for occlusion of viral progeny. *Plos One* **7**, e46146.

An SH, Wang D, Zhang-Nv Y, Guo ZJ, Xu HJ, Sun JX, and Zhang CX (2005): Characterization of a late expression gene, Open reading frame 128 of Helicoverpa armigera single nucleocapsid nucleopolyhedrovirus. *Arch.Virol*. **150**, 2453-2466.

Andersen, MR, Salazar, MP, Schaap, PJ, van de Vondervoort, PJ, Culley, D, Thykaer, J, Frisvad, JC, Nielsen, KF, Albang, R, Albermann, K, Berka, RM, Braus, GH, Braus-Stromeyer, SA, Corrochano, LM, Dai, Z, van Dijck, PW, Hofmann, G, Lasure, LL, Magnuson, JK, Menke, H, Meijer, M, Meijer, SL, Nielsen, JB, Nielsen, ML, van Ooyen, AJ, Pel, HJ, Poulsen, L, Samson, RA, Stam, H, Tsang, A, van den Brink, JM, Atkins, A, Aerts, A, Shapiro, H, Pangilinan, J, Salamov, A, Lou, Y, Lindquist, E, Lucas, S, Grimwood, J, Grigoriev, IV, Kubicek, CP, Martinez, D, van Peij, NN, Roubos, JA, Nielsen, J, and Baker, SE (2011): Comparative genomics of citric-acid-producing Aspergillus niger ATCC 1015 versus enzyme-producing CBS 513.88. *Genome Res*. **21**, 885-897.

Argaud, O, Croizier, L, Lopez-Ferber, M, and Croizier, G (1998): Two key mutations in the host-range specificity domain of the p143 gene of Autographa californica nucleopolyhedrovirus are required to kill Bombyx mori larvae. *J. Gen. Virol*. **79**, 931-935.

Bai, H, Liang, A, and Fu, Y (2020): Ac154 carried out anti-apoptotic role during AcMNPV infection process in the host insect cells. *Mol. Cell. Biochem*. **463**, 79-90.

Becker, D, and Knebel-Morsdorf, D (1993): Sequence and temporal appearance of the early transcribed baculovirus gene HE65. *J. Virol*. **67**, 5867-5872.

Belyavskyi, M, Braunagel, SC, and Summers, MD (1998): The structural protein ODV-EC27 of Autographa californica nucleopolyhedrovirus is a multifunctional viral cyclin. *Proc. Natl. Acad. Sci. U. S. A*. **95**, 11205-11210.

Beniya, H, Braunagel, SC, and Summers, MD (1998): Autographa californica nuclear polyhedrosis virus: subcellular localization and protein trafficking of BV/ODV-E26 to intranuclear membranes and viral envelopes. *Virology* **240**, 64-75.

Bertin, J, Mendrysa, SM, LaCount, DJ, Gaur, S, Krebs, JF, Armstrong, RC, Tomaselli, KJ, and Friesen, PD (1996): Apoptotic suppression by baculovirus P35 involves cleavage by and inhibition of a virus-induced CED-3/ICE-like protease. *J. Virol*. **70**, 6251-6259.

Bischoff, DS, and Slavicek, JM (1999): Impact of deletion of the Lymantria dispar nucleopolyhedrovirus PEP gene on viral potency: Expression of the green fluorescent protein prevents larval liquefaction. *Biol. Control.* **14**, 51-59.

Biswas, S, Willis, LG, Fang, M, Nie, Y, and Theilmann, DA (2018): Autographa californica Nucleopolyhedrovirus AC141 (Exon0), a Potential E3 Ubiquitin Ligase, Interacts with Viral Ubiquitin and AC66 To Facilitate Nucleocapsid Egress. *J. Virol*. **92**, e01713-17.

Boogaard, B, Evers, F, van Lent, JWM, and van Oers, MM (2019): The baculovirus Ac108 protein is a per os infectivity factor and a component of the ODV entry complex. *J. Gen. Virol*. **100**, 669-678.

Braunagel, SC, Burks, JK, Rosas-Acosta, G, Harrison, RL, Ma, H, and Summers, MD (1999): Mutations within the Autographa californica nucleopolyhedrovirus FP25K gene decrease the accumulation of ODV-E66 and alter its intranuclear transport. *J. Virol*. **73**, 8559-8570.

Braunagel, SC, Cox, V, and Summers, MD (2009): Baculovirus data suggest a common but multifaceted pathway for sorting proteins to the inner nuclear membrane. *J. Virol*. **83**, 1280-1288.

Braunagel, SC, Guidry, PA, Rosas-Acosta, G, Engelking, L, and Summers, MD (2001): Identification of BV/ODV-C42, an Autographa californica nucleopolyhedrovirus orf101-encoded structural protein detected in infected-cell complexes with ODV-EC27 and p78/83. *J. Virol*. **75**, 12331-12338.

Braunagel, SC, Russell, WK, Rosas-Acosta, G, Russell, DH, and Summers, MD (2003): Determination of the protein composition of the occlusion-derived virus of Autographa californica nucleopolyhedrovirus. *Proc. Natl. Acad. Sci. U. S. A.* **100**, 9797-9802.

Broussard, DR, Guarino, LA, and Jarvis, DL (1996a): Dynamic phosphorylation of Autographa californica nuclear polyhedrosis virus pp31. *J. Virol.* **70**, 6767-6774.

Broussard, DR, Guarino, LA, and Jarvis, DL (1996b): Mapping functional domains in AcMNPV pp31. *Virology* **222**, 318-331.

Cai Y, Long Z, Qiu J, Yuan M, Li G, and Yang K (2012): An ac34 deletion mutant of Autographa californica nucleopolyhedrovirus exhibits delayed late gene expression and a lack of virulence in vivo. *J. Virol.* **86**, 10432-10443.

Carpentier DC, Griffiths CM, and King LA (2008): The baculovirus P10 protein of Autographa californica nucleopolyhedrovirus forms two distinct cytoskeletal-like structures and associates with polyhedral occlusion bodies during infection. *Virology* **371**, 278-291.

Charlton CA, and Volkman LE (1993): Penetration of Autographa californica nuclear polyhedrosis virus nucleocapsids into IPLB Sf 21 cells induces actin cable formation. *Virology* **197**, 245-254.

Chen CJ, and Thiem SM (1997): Differential infectivity of two Autographa californica nucleopolyhedrovirus mutants on three permissive cell lines is the result of lef-7 deletion. *Virology* **227**, 88-95.

Chen G, Fang Y, Hu Z, Krell PJ, and Feng G (2016): Rescue of dnapol-null Autographa californica multiple nucleopolyhedrovirus with DNA polymerase (DNApol) of Spodoptera litura nucleopolyhedrovirus (SpltNPV) and identification of a nuclear localization signal in SpltNPV DNApol. *J. Gen. Virol*. **97**, 1968-1980.

Chen G, Fang Y, Yan Q, Li P, Wu L, and Feng G (2019): The deficiency in nuclear localization signal of Neodiprion lecontei nucleopolyhedrovirus DNA polymerase prevents rescue of viral DNA replication and virus production in dnapol-null Autographa californica multiple nucleopolyhedrovirus. *Virus. Res*. **266**, 52-57.

Chen G, Yan Q, Fang Y, Wu L, Krell PJ, and Feng G (2018): The N Terminus of Autographa californica Multiple Nucleopolyhedrovirus DNA Polymerase Is Required for Efficient Viral DNA Replication and Virus and Occlusion Body Production. *J. Virol.* **92**, e00398-18.

Chen G, Yan Q, Wang H, Chao S, Wu L, Krell PJ, and Feng G (2020): Identification and Characterization of the Nucleolar Localization Signal of Autographa californica Multiple Nucleopolyhedrovirus LEF5. *J. Virol.* **94**, e01891-19.

Chen H, Li M, Mai W, Tang Q, Li G, Chen K, and Zhou Y (2014): Analysis of BmNPV orf101

disruption: orf101 is essential for mediating budded virus production. *Cytotechnology* **66**, 1021-1029.

Chen HQ, Zhou YJ, Chen KP, and Yu Q (2013a): Expression and functional validation of Bombyx mori nucleopolyhedrovirus ORF29, a conserved Nudix motif protein. *Acta. Virol.* **57**, 442-446.

Chen L, Hu X, Xiang X, Yu S, Yang R, and Wu X (2012a): Autographa californica multiple nucleopolyhedrovirus odv-e25 (Ac94) is required for budded virus infectivity and occlusion-derived virus formation. *Arch. Virol*. **157**, 617-625.

Chen L, Shen Y, Yang R, Wu X, Hu W, and Shen G (2015): Bombyx mori nucleopolyhedrovirus (BmNPV) Bm64 is required for BV production and per os infection. *Virol. J*. **12**, 173.

Chen L, Yang R, Hu X, Xiang X, Yu S, and Wu X (2013b): The formation of occlusion-derived virus is affected by the expression level of ODV-E25. *Virus Res*. **173**, 404-414

Chen X, Yang X, Lei C, Qin F, and Hu J (2021): Autographa Californica Multiple Nucleopolyhedrovirus orf13 Is Required for Efficient Nuclear Egress of Nucleocapsids. *Virol. Sin.* **36**, 968-980.

Chen Y, Zheng F, Tao L, Zheng Z, Liu Y, and Wang H (2012b): Helicoverpa armaigera nucleopolyhedrovirus ORF50 is an early gene not essential for virus propagation in vitro and in vivo. *Virus Genes* **45**, 149-160.

Chen Z, and Carstens EB (2005): Identification of domains in Autographa californica multiple nucleopolyhedrovirus late expression factor 3 required for nuclear transport of P143. *J. Virol.* **79**, 10915-10922.

Cheng X, Krell P, and Arif B (2001): P34.8 (GP37) is not essential for baculovirus replication. *J. Gen. Virol.* **82**, 299-305.

Clavijo G, Williams T, Simon O, Munoz D, Cerutti M, Lopez-Ferber M, and Caballero P (2009): Mixtures of complete and pif1- and pif2-deficient genotypes are required for increased potency of an insect nucleopolyhedrovirus. *J. Virol.* **83**, 5127-5136.

Clem RJ, and Miller LK (1993): Apoptosis reduces both the in vitro replication and the in vivo infectivity of a baculovirus. *J. Virol.* **67**, 3730-3738.

Clem RJ, and Miller LK (1994): Control of programmed cell death by the baculovirus genes p35 and iap. *Mol. Cell. Biol.* **14**, 5212-5222.

Clem RJ, Robson M, and Miller LK (1994): Influence of infection route on the infectivity of baculovirus mutants lacking the apoptosis-inhibiting gene p35 and the adjacent gene p94. *J. Virol.* **68**, 6759-6762.

Clem SA, Wu W, and Passarelli AL (2014): The Trichoplusia ni single nucleopolyhedrovirus tn79 gene encodes a functional sulfhydryl oxidase enzyme that is able to support the replication of Autographa californica multiple nucleopolyhedrovirus lacking the sulfhydryl oxidase ac92 gene. *Virology* **460-461**, 207-216.

Costa Navarro GS, Amalfi S, Lopez MG, Llauger G, Arneodo JD, Taboga O, and Alfonso V (2019): The autographa californica multiple nucleopolyhedrovirus Ac12: A non-essential F box-like protein that interacts with cellular SKP1 component of the E3 ubiquitin ligase complex. *Virus Res*. **260**, 67-77.

Crawford AM, and Miller LK (1988): Characterization of an early gene accelerating expression of late genes of the baculovirus Autographa californica nuclear polyhedrosis virus. *J. Virol.* **62**, 2773-2781.

Croizier G, Croizier L, Argaud O, and Poudevigne D (1994): Extension of Autographa californica nuclear polyhedrosis virus host range by interspecific replacement of a short DNA sequence in the p143 helicase gene. *Proc. Natl. Acad. Sci. U. S. A.* **91**, 48-52.

D'Amico V, Slavicek J, Podgwaite JD, Webb R, Fuester R, and Peiffer RA (2013): Deletion of v-chiA from a baculovirus reduces horizontal transmission in the field. *Appl. Environ. Microbiol*. **79**, 4056-4064.

Dai X, Stewart TM, Pathakamuri JA, Li Q, and Theilmann DA (2004a): Autographa californica multiple nucleopolyhedrovirus exon0 (orf141), which encodes a RING finger protein, is required for efficient production of budded virus. *J. Virol.* **78**, 9633-9644.

Dai X, Willis LG, Huijskens I, Palli SR, and Theilmann DA (2004b): The acidic activation domains of the baculovirus transactivators IE1 and IE0 are functional for transcriptional activation in both insect and mammalian cells. *J. Gen. Virol.* **85**, 573-582.

Daimon T, Katsuma S, and Shimada T (2007): Mutational analysis of active site residues of chitinase from Bombyx mori nucleopolyhedrovirus. *Virus Res*. **124**, 168-175.

de Jong J, Arif BM, Theilmann DA, and Krell PJ (2009): Autographa californica multiple nucleopolyhedrovirus me53 (ac140) is a nonessential gene required for efficient budded-virus production. *J. Virol.* **83**, 7440-7448.

de Jong J, Theilmann DA, Arif BM, and Krell PJ (2011): Immediate-early protein ME53 forms foci and colocalizes with GP64 and the major capsid protein VP39 at the cell membranes of Autographa californica multiple nucleopolyhedrovirus-infected cells. *J. Virol.* **85**, 9696-9707.

Detvisitsakun C, Cain EL, and Passarelli AL (2007): The Autographa californica M nucleopolyhedrovirus fibroblast growth factor accelerates host mortality. *Virology* **365**, 70-78.

Dever TE, Sripriya R, McLachlin JR, Lu J, Fabian JR, Kimball SR, and Miller LK (1998): Disruption of cellular translational control by a viral truncated eukaryotic translation initiation factor 2alpha kinase homolog. *Proc. Natl. Acad. Sci. U. S. A.* **95**, 4164-4169.

Dickison VL, Willis LG, Sokal NR, and Theilmann DA (2012): Deletion of AcMNPV ac146 eliminates the production of budded virus. *Virology* **431**, 29-39.

Dong F, Wang JW, Deng RQ, and Wang XZ (2016): Autographa californica multiple nucleopolyhedrovirus gene ac81 is required for nucleocapsid envelopment. *Virus Res*. **221**, 47-57.

Dong ZQ, Hu N, Dong FF, Chen TT, Jiang YM, Chen P, Lu C, and Pan MH (2017): Baculovirus LEF-11 Hijack Host ATPase ATAD3A to Promote Virus Multiplication in Bombyx mori cells. *Sci. Rep*. **7**, 46187.

Dong ZQ, Hu N, Zhang J, Chen TT, Cao MY, Li HQ, Lei XJ, Chen P, Lu C, and Pan MH (2015): Oligomerization of Baculovirus LEF-11 Is Involved in Viral DNA Replication. *Plos One* **10**, e0144930.

Dong ZQ, Zhang J, Chen XM, He Q, Cao MY, Wang L, Li HQ, Xiao WF, Pan CX, Lu C, and Pan MH (2014): Bombyx mori nucleopolyhedrovirus ORF79 is a per os infectivity factor associated with the PIF complex. *Virus Res*. **184**, 62-70.

Dreschers S, Roncarati R, and Knebel-Morsdorf D (2001): Actin rearrangement-inducing factor of baculoviruses is tyrosine phosphorylated and colocalizes to F-actin at the plasma membrane. *J. Virol.* **75**, 3771-3778.

Du MF, Yin XM, Guo ZJ, and Zhu LJ (2006): Characterization of a late gene, ORF60 from Bombyx mori nucleopolyhedrovirus. *J. Biochem. Mol. Biol*. **39**, 737-742.

Durantel D, Croizier L, Ayres MD, Croizier G, Possee RD, and Lopez-Ferber M (1998): The pnk/pnl gene (ORF 86) of Autographa californica nucleopolyhedrovirus is a non-essential, immediate early gene. *J. Gen. Virol.* **79**, 629-637.

Eldridge R, Li Y, and Miller LK (1992): Characterization of a baculovirus gene encoding a small conotoxinlike polypeptide. *J. Virol.* **66**, 6563-6571.

Evans JT, Leisy DJ, and Rohrmann GF (1997): Characterization of the interaction between the baculovirus replication factors LEF-1 and LEF-2. *J. Virol.* **71**, 3114-3119.

Fan X, Thirunavukkarasu K, and Weaver RF (1996): Temperature-sensitive mutations in the protein kinase-1 (pk-1) gene of the Autographa californica nuclear polyhedrosis virus that block very late gene expression. *Virology* **224**, 1-9.

Fan XM, McLachlin JR, and Weaver RF (1998): Identification and characterization of a protein kinase-interacting protein encoded by the Autographa californica nuclear polyhedrosis virus. *Virology* **240**, 175-182.

Fang M, Dai X, and Theilmann DA (2007): Autographa californica multiple nucleopolyhedrovirus EXON0 (ORF141) is required for efficient egress of nucleocapsids from the nucleus. *J. Virol.* **81**, 9859-9869.

Fang M, Nie Y, Dai X, and Theilmann DA (2008): Identification of AcMNPV EXON0 (ac141) domains required for efficient production of budded virus, dimerization and association with BV/ODV-C42 and FP25. *Virology* **375**, 265-276.

Fang M, Nie Y, Harris S, Erlandson MA, and Theilmann DA (2009a): Autographa californica multiple nucleopolyhedrovirus core gene ac96 encodes a per Os infectivity factor (PIF-4). *J. Virol.* **83**, 12569-12578.

Fang M, Nie Y, and Theilmann DA (2009b): AcMNPV EXON0 (AC141) which is required for the efficient egress of budded virus nucleocapsids interacts with beta-tubulin. *Virology* **385**, 496-504.

Fang M, Nie Y, and Theilmann DA (2009c): Deletion of the AcMNPV core gene ac109 results in budded virions that are non-infectious. *Virology* **389**, 66-74.

Fang M, Nie Y, Wang Q, Deng F, Wang R, Wang H, Vlak JM, Chen X, and Hu Z (2006): Open reading frame 132 of Helicoverpa armigera nucleopolyhedrovirus encodes a functional per os infectivity factor (PIF-2). *J. Gen. Virol.* **87**, 2563-2569.

Fang M, Wang H, Yuan L, Chen X, Vlak JM, and Hu Z (2003): Open reading frame 94 of Helicoverpa armigera single nucleocapsid nucleopolyhedrovirus encodes a novel conserved occlusion-derived virion protein, ODV-EC43. *J. Gen. Virol.* **84**, 3021-3027.

Fang Z, Li C, Wu W, Yuan M, and Yang K (2016): The Autographa californica multiple nucleopolyhedrovirus Ac132 plays a role in nuclear entry. *J. Gen. Virol.* **97**, 3030-3038.

Fang Z, Que Y, Li J, and Zhang Z (2019): The deletion of the AcMNPV ac124 gene resulted in a decrease in chitinase transcription. *Virus Res*. **263**, 151-158.

Faulkner P, Kuzio J, Williams GV, and Wilson JA (1997): Analysis of p74, a PDV envelope protein of Autographa californica nucleopolyhedrovirus required for occlusion body infectivity in vivo. *J. Gen. Virol.* **78**, 3091-3100.

Feng G, and Krell PJ (2014): Autographa californica multiple nucleopolyhedrovirus DNA polymerase C terminus is required for nuclear localization and viral DNA replication. *J. Virol.* **88**,

10918-10933.

Flipsen JT, Mans RM, Kleefsman AW, Knebel-Morsdorf D, and Vlak JM (1995): Deletion of the baculovirus ecdysteroid UDP-glucosyltransferase gene induces early degeneration of Malpighian tubules in infected insects. *J. Virol.* **69**, 4529-4532.

Fu Y, Wang R, and Liang A (2018): Function analysis of Ac-PCNA and Sf-PCNA during the Autographa californica multiple nucleopolyhedrovirus infection process. *Mol. Cell. Biochem.* **443**, 57-68.

Gandhi KM, Ohkawa T, Welch MD, and Volkman LE (2012): Nuclear localization of actin requires AC102 in Autographa californica multiple nucleopolyhedrovirus-infected cells. *J. Gen. Virol.* **93**, 1795-1803.

Garretson TA, McCoy JC, and Cheng XW (2016): Baculovirus FP25K Localization: Role of the Coiled-Coil Domain. *J. Virol.* **90**, 9582-9597.

Gauthier D, Thirunavukkarasu K, Faris BL, Russell DL, and Weaver RF (2012): Characterization of an Autographa californica multiple nucleopolyhedrovirus dual mutant: ORF82 is required for budded virus production, and a point mutation in LEF-8 alters late and abolishes very late transcription. *J. Gen. Virol.* **93**, 364-373.

Ge J, Wei Z, Huang Y, Yin J, Zhou Z, and Zhong J (2007): AcMNPV ORF38 protein has the activity of ADP-ribose pyrophosphatase and is important for virus replication. *Virology* **361**, 204-211.

Ge JQ, Yang ZN, Tang XD, Xu HJ, Hong J, Chen JG, and Zhang CX (2008): Characterization of a nucleopolyhedrovirus with a deletion of the baculovirus core gene Bm67. *J. Gen. Virol.* **89**, 766-774.

Ge JQ, Zhao JF, Shao YM, Tian CH, and Zhang CX (2009): Characterization of an early gene orf122 from Bombyx mori nucleopolyhedrovirus. *Mol. Biol. Rep.* **36**, 543-548.

Gearing KL, and Possee RD (1990): Functional analysis of a 603 nucleotide open reading frame upstream of the polyhedrin gene of Autographa californica nuclear polyhedrosis virus. *J. Gen. Virol.* **71**, 251-262.

Gebhardt MM, Eberle KE, Radtke P, and Jehle JA (2014): Baculovirus resistance in codling moth is virus isolate-dependent and the consequence of a mutation in viral gene pe38. *Proc. Natl. Acad. Sci. U. S. A.* **111**, 15711-15716.

Goley ED, Ohkawa T, Mancuso J, Woodruff JB, D'Alessio JA, Cande WZ, Volkman LE, and Welch MD (2006): Dynamic nuclear actin assembly by Arp2/3 complex and a baculovirus WASP-like protein. *Science* **314**, 464-467.

Gombart AF, Blissard GW, and Rohrmann GF (1989): Characterization of the genetic organization of the HindIII M region of the multicapsid nuclear polyhedrosis virus of Orgyia pseudotsugata reveals major differences among baculoviruses. *J. Gen. Virol.* **70**, 1815-1828.

Gomi S, Kamita SG, and Maeda S (1999): Deletion analysis of all genes of Bombyx mori nucleopolyhedrovirus (BmNPV). *RIKEN REVIEW*, 39-41.

Gomi S, Zhou CE, Yih W, Majima K, and Maeda S (1997): Deletion analysis of four of eighteen late gene expression factor gene homologues of the baculovirus, BmNPV. *Virology* **230**, 35-47.

Graves LP, Hughes LC, Irons SL, Possee RD, and King LA (2019): In cultured cells the baculovirus P10 protein forms two independent intracellular structures that play separate roles in occlusion body maturation and their release by nuclear disintegration. *PLoS Pathog*. **15**, e1007827.

Griffiths CM, Barnett AL, Ayres MD, Windass J, King LA, and Possee RD (1999): In vitro host range of Autographa californica nucleopolyhedrovirus recombinants lacking functional p35, iap1 or iap2. *J. Gen. Virol.* **80**, 1055-1066.

Gross CH, Russell RL, and Rohrmann GF (1994): Orgyia pseudotsugata baculovirus p10 and polyhedron envelope protein genes: analysis of their relative expression levels and role in polyhedron structure. *J. Gen. Virol.* **75**, 1115-1123.

Gross CH, and Shuman S (1998a): Characterization of a baculovirus-encoded RNA 5'-triphosphatase. *J. Virol.* **72**, 7057-7063.

Gross CH, and Shuman S (1998b): RNA 5'-triphosphatase, nucleoside triphosphatase, and guanylyltransferase activities of baculovirus LEF-4 protein. *J. Virol.* **72**, 10020-8.

Gross CH, Wolgamot GM, Russell RL, Pearson MN, and Rohrmann GF (1993): A baculovirus encoded 16-kDa glycoprotein localizes near the nuclear membrane of infected cells. *Virology* **192**, 386-390.

Guan ZW, Zhong L, Li CY, Wu WB, Yuan MJ, and Yang K (2016): The Autographa californica Multiple Nucleopolyhedrovirus ac54 Gene Is Crucial for Localization of the Major Capsid Protein VP39 at the Site of Nucleocapsid Assembly. *J. Virol.* **90**, 4115-4126.

Guarino LA, Dong W, Xu B, Broussard DR, Davis RW, and Jarvis DL (1992): Baculovirus phosphoprotein pp31 is associated with virogenic stroma. *J. Virol.* **66**, 7113-7120.

Guarino LA, Jin J, and Dong W (1998): Guanylyltransferase activity of the LEF-4 subunit of baculovirus RNA polymerase. *J. Virol.* **72**, 10003-10010.

Guarino LA, Mistretta TA, and Dong W (2002): Baculovirus lef-12 is not required for viral replication. *J. Virol.* **76**, 12032-12043.

Guarino LA, and Summers MD (1986): Functional mapping of a trans-activating gene required for expression of a baculovirus delayed-early gene. *J. Virol.* **57**, 563-571.

Guo Y, Liang A, and Fu Y (2019): Ac25 in Autographa californica multiple nucleopolyhedrovirus was crucial for progeny budded virion production. *Biotechnol. Lett.* **41**, 1121-1131.

Guo YJ, Fu SH, and Li LL (2017): Autographa californica multiple nucleopolyhedrovirus ac75 is required for egress of nucleocapsids from the nucleus and formation of de novo intranuclear membrane microvesicles. *Plos One* **12**, e0185630.

Guo ZJ, Qiu LH, An SH, Yao Q, Park EY, Chen KP, and Zhang CX (2010a): Open reading frame 60 of the Bombyx mori nucleopolyhedrovirus plays a role in budded virus production. *Virus Res.* **151**, 185-191.

Guo ZJ, Wang DX, Yao Q, Chen KP, and Zhang CX (2010b): Identification of a novel functional nuclear localization signal in the protein encoded by open reading frame 47 of Bombyx mori nucleopolyhedrovirus. *Arch. Virol.* **155**, 1943-150.

Haas-Stapleton EJ, Washburn JO, and Volkman LE (2004): P74 mediates specific binding of Autographa californica M nucleopolyhedrovirus occlusion-derived virus to primary cellular targets in the midgut epithelia of Heliothis virescens Larvae. *J. Virol.* **78**, 6786-6791.

Haas AL, Katzung DJ, Reback PM, and Guarino LA (1996): Functional characterization of the ubiquitin variant encoded by the baculovirus Autographa californica. *Biochemistry* **35**, 5385-5394.

Han Y, van Houte S, Drees GF, van Oers MM, and Ros VI (2015): Parasitic Manipulation of Host Behaviour: Baculovirus SeMNPV EGT Facilitates Tree-Top Disease in Spodoptera exigua Larvae by Extending the Time to Death. *Insects* **6**, 716-731.

Hang X, Dong W, and Guarino LA (1995): The lef-3 gene of Autographa californica nuclear polyhedrosis virus encodes a single-stranded DNA-binding protein. *J. Virol.* **69**, 3924-3928.

Hao B, Huang J, Sun X, Deng F, Zhang Y, Wang H, Chen H, and Hu Z (2009): Variants of open reading frame Bm126 in wild-type Bombyx mori nucleopolyhedrovirus isolates exhibit functional differences. *J. Gen. Virol.* **90**, 153-161.

Harrison RL, Sparks WO, and Bonning BC (2010): Autographa californica multiple nucleopolyhedrovirus ODV-E56 envelope protein is required for oral infectivity and can be substituted functionally by Rachiplusia ou multiple nucleopolyhedrovirus ODV-E56. *J. Gen. Virol.* **91**, 1173-1182.

Harrison RL, and Summers MD (1995): Mutations in the Autographa californica multinucleocapsid nuclear polyhedrosis virus 25 kDa protein gene result in reduced virion occlusion, altered intranuclear envelopment and enhanced virus production. *J. Gen. Virol.* **76**, 1451-1459.

Harwood SH, Li L, Ho PS, Preston AK, and Rohrmann GF (1998): AcMNPV late expression factor-5 interacts with itself and contains a zinc ribbon domain that is required for maximal late transcription activity and is homologous to elongation factor TFIIS. *Virology* **250**, 118-134.

Hawtin RE, Zarkowska T, Arnold K, Thomas CJ, Gooday GW, King LA, Kuzio JA, and Possee RD (1997): Liquefaction of Autographa californica nucleopolyhedrovirus-infected insects is dependent on the integrity of virus-encoded chitinase and cathepsin genes. *Virology* **238**, 243-253.

Hefferon KL (2003): ORF98 of Autographa californica nucleopolyhedrosisvirus is an auxiliary factor in late gene expression. *Can. J. Microbiol*. **49**, 157-163.

Hepp SE, Borgo GM, Ticau S, Ohkawa T, and Welch MD (2018): Baculovirus AC102 Is a Nucleocapsid Protein That Is Crucial for Nuclear Actin Polymerization and Nucleocapsid Morphogenesis. *J. Virol.* **92**, e00111-18.

Hikida H, Kokusho R, Kobayashi J, Shimada T, and Katsuma S (2018): Inhibitory role of the Bm8 protein in the propagation of Bombyx mori nucleopolyhedrovirus. *Virus Res*. **249**, 124-131.

Hodgson JJ, Arif BM, and Krell PJ (2011): Interaction of Autographa californica multiple nucleopolyhedrovirus cathepsin protease progenitor (proV-CATH) with insect baculovirus chitinase as a mechanism for proV-CATH cellular retention. *J. Virol.* **85**, 3918-3929.

Hom LG, and Volkman LE (2000): Autographa californica M nucleopolyhedrovirus chiA is required for processing of V-CATH. *Virology* **277**, 178-183.

Hong T, Braunagel SC, and Summers MD (1994): Transcription, translation, and cellular localization of PDV-E66: a structural protein of the PDV envelope of Autographa californica nuclear polyhedrosis virus. *Virology* **204**, 210-222.

Hou D, Kuang W, Luo S, Zhang F, Zhou F, Chen T, Zhang Y, Wang H, Hu Z, Deng F, and Wang M (2019): Baculovirus ODV-E66 degrades larval peritrophic membrane to facilitate baculovirus oral infection. *Virology* **537**, 157-164.

Hu Z, Yuan M, Wu W, Liu C, Yang K, and Pang Y (2010): Autographa californica multiple nucleopolyhedrovirus ac76 is involved in intranuclear microvesicle formation. *J. Virol.* **84**, 7437-7447.

Huang H, Wang M, Deng F, Wang H, and Hu Z (2012): ORF85 of HearNPV encodes the per os infectivity factor 4 (PIF4) and is essential for the formation of the PIF complex. *Virology* **427**, 217-223.

Huang HC, Wang ML, Deng F, Hou DH, Arif BM, Wang HL, and Hu ZH (2014): The ha72 Core

Gene of Baculovirus Is Essential for Budded Virus Production and Occlusion-Derived Virus Embedding, and Amino Acid K22 Plays an Important Role in Its Function. *J. Virol.* **88**, 705-709.

Huang J, Hao B, Deng F, Sun X, Wang H, and Hu Z (2008): Open reading frame Bm21 of Bombyx mori nucleopolyhedrovirus is not essential for virus replication in vitro, but its deletion extends the median survival time of infected larvae. *J. Gen. Virol.* **89**, 922-930.

Huang J, Li J, Cheng C, Tang X, Shen X, and Hao B (2019): An amino acid duplication/insertion in the Bm126 gene of Bombyx mori nucleopolyhedrovirus alters viral gene expression as shown by differential gene expression analysis. *Arch. Virol*. **164**, 831-838.

Huang Z, Pan M, Zhu S, Zhang H, Wu W, Yuan M, and Yang K (2017): The Autographa californica Multiple Nucleopolyhedrovirus ac83 Gene Contains a cis-Acting Element That Is Essential for Nucleocapsid Assembly. *J. Virol.* **91**, e02110-16.

Huijskens I, Li L, Willis LG, and Theilmann DA (2004): Role of AcMNPV IE0 in baculovirus very late gene activation. *Virology* **323**, 120-130.

Ioannidis K, Swevers L, and Iatrou K (2016): Bombyx mori nucleopolyhedrovirus lef8 gene: effects of deletion and implications for gene transduction applications. *J. Gen. Virol.* **97**, 786-796.

Iorio C, Vialard JE, McCracken S, Lagace M, and Richardson CD (1998): The late expression factors 8 and 9 and possibly the phosphoprotein p78/83 of Autographa californica multicapsid nucleopolyhedrovirus are components of the virus-induced RNA polymerase. *Intervirology* **41**, 35-46.

Ishihara G, Shimada T, and Katsuma S (2013): Functional characterization of Bombyx mori nucleopolyhedrovirus CG30 protein. *Virus Res*. **174**, 52-59

Ito E, Sahri D, Knippers R, and Carstens EB (2004): Baculovirus proteins IE-1, LEF-3, and P143 interact with DNA in vivo: a formaldehyde cross-linking study. *Virology* **329**, 337-347.

Iwahori S, Ikeda M, and Kobayashi M (2002): Generation and characterization of Autographa californica nucleopolyhedrovirus mutants defective in pcna gene homologue. *J. Insect Biotechnol. Sericol.* **71**, 129-139

Iwahori S, Ikeda M, and Kobayashi M (2004): Association of Sf9 cell proliferating cell nuclear antigen with the DNA replication site of Autographa californica multicapsid nucleopolyhedrovirus. *J. Gen. Virol.* **85**, 2857-2862.

Iwanaga M, Kurihara M, Kobayashi M, and Kang W (2002): Characterization of Bombyx mori nucleopolyhedrovirus orf68 gene that encodes a novel structural protein of budded virus. *Virology* **297**, 39-47.

Jarvis, DL, Wills, L, Burow, G, and Bohlmeyer, DA (1998): Mutational analysis of the N-linked glycans on Autographa californica nucleopolyhedrovirus gp64. *J. Virol.* **72**, 9459-9469.

Javed MA, Biswas S, Willis LG, Harris S, Pritchard C, van Oers MM, Donly BC, Erlandson MA, Hegedus DD, and Theilmann DA (2017): Autographa californica Multiple Nucleopolyhedrovirus AC83 is a Per Os Infectivity Factor (PIF) Protein Required for Occlusion-Derived Virus (ODV) and Budded Virus Nucleocapsid Assembly as well as Assembly of the PIF Complex in ODV Envelopes. *J. Virol*. **91**, e02115-16.

Ji X, Sutton G, Evans G, Axford D, Owen R, and Stuart DI (2010): How baculovirus polyhedra fit square pegs into round holes to robustly package viruses. *Embo. J*. **29**, 505-514.

Jiantao L, Zhu L, Zhang S, Deng Z, Huang Z, Yuan M, Wu W, and Yang K (2016): The Autographa californica multiple nucleopolyhedrovirus ac110 gene encodes a new per os infectivity factor.

Virus Res. **221**, 30-37.

Jin J, Dong W, and Guarino LA (1998): The LEF-4 subunit of baculovirus RNA polymerase has RNA 5'-triphosphatase and ATPase activities. *J. Virol.* **72**, 10011-10019.

Kamita SG, Nagasaka K, Chua JW, Shimada T, Mita K, Kobayashi M, Maeda S, and Hammock BD (2005): A baculovirus-encoded protein tyrosine phosphatase gene induces enhanced locomotory activity in a lepidopteran host. *Proc. Natl. Acad. Sci. U. S. A.* **102**, 2584-2589.

Kang W, Imai N, Kawasaki Y, Nagamine T, and Matsumoto S (2005): IE1 and hr facilitate the localization of Bombyx mori nucleopolyhedrovirus ORF8 to specific nuclear sites. *J. Gen. Virol.* **86**, 3031-3038.

Kang W, Kurihara M, and Matsumoto S (2006): The BRO proteins of Bombyx mori nucleopolyhedrovirus are nucleocytoplasmic shuttling proteins that utilize the CRM1-mediated nuclear export pathway. *Virology* **350**, 184-191.

Kang W, Suzuki M, Zemskov E, Okano K, and Maeda S (1999): Characterization of baculovirus repeated open reading frames (bro) in Bombyx mori nucleopolyhedrovirus. *J. Virol.* **73**, 10339-10345.

Kang WK, Imai N, Suzuki M, Iwanaga M, Matsumoto S, and Zemskov EA (2003): Interaction of Bombyx mori nucleopolyhedrovirus BRO-A and host cell protein laminin. *Arch. Virol*. **148**, 99-113.

Katsuma S (2015): Phosphatase activity of Bombyx mori nucleopolyhedrovirus PTP is dispensable for enhanced locomotory activity in B. mori larvae. *J. Invertebr. Pathol.* **132**, 228-232.

Katsuma S, Daimon T, Horie S, Kobayashi M, and Shimada T (2006a): N-linked glycans of Bombyx mori nucleopolyhedrovirus fibroblast growth factor are crucial for its secretion. *Biochem. Biophys. Res. Commun*. **350**, 1069-1075.

Katsuma S, Fujii T, Kawaoka S, and Shimada T (2008a): Bombyx mori nucleopolyhedrovirus SNF2 global transactivator homologue (Bm33) enhances viral pathogenicity in B. mori larvae. *J. Gen. Virol.* **89**, 3039-3046.

Katsuma S, Horie S, Daimon T, Iwanaga M, and Shimada T (2006b): In vivo and in vitro analyses of a Bombyx mori nucleopolyhedrovirus mutant lacking functional vfgf. *Virology* **355**, 62-70.

Katsuma S, Kawaoka S, Mita K, and Shimada T (2008b): Genome-wide survey for baculoviral host homologs using the Bombyx genome sequence. *Insect Biochem. Mol. Biol*. **38**, 1080-1086.

Katsuma S, Kobayashi J, Koyano Y, Matsuda-Imai N, Kang W, and Shimada T (2012): Baculovirus-encoded protein BV/ODV-E26 determines tissue tropism and virulence in lepidopteran insects. *J. Virol.* **86**, 2545-2555.

Katsuma S, and Kokusho R (2017): A Conserved Glycine Residue Is Required for Proper Functioning of a Baculovirus VP39 Protein. *J. Virol.* **91**, e02253-16.

Katsuma S, Nakanishi T, Daimon T, and Shimada T (2009a): N-linked glycans located in the pro-region of Bombyx mori nucleopolyhedrovirus V-CATH are essential for the proper folding of V-CATH and V-CHIA. *J. Gen. Virol.* **90**, 170-176.

Katsuma S, Nakanishi T, and Shimada T (2009b): Bombyx mori nucleopolyhedrovirus FP25K is essential for maintaining a steady-state level of v-cath expression throughout the infection. *Virus Res*. **140**, 155-160.

Katsuma S, Noguchi Y, Zhou CL, Kobayashi M, and Maeda S (1999): Characterization of the 25K FP gene of the baculovirus Bombyx mori nucleopolyhedrovirus: implications for post-mortem host degradation. *J. Gen. Virol.* **80**, 783-791.

Katsuma S, and Shimada T (2009): Bombyx mori nucleopolyhedrovirus ORF34 is required for efficient transcription of late and very late genes. *Virology* **392**, 230-237.

Ke J, Wang J, Deng R, Lin L, Jinlong B, Yaoping L, and Wang X (2011): Characterization of AcMNPV with a deletion of ac69 gene. *Microbiol. Res.* **2**, e4.

Ke J, Wang J, Deng R, and Wang X (2008): Autographa californica multiple nucleopolyhedrovirus ac66 is required for the efficient egress of nucleocapsids from the nucleus, general synthesis of preoccluded virions and occlusion body formation. *Virology* **374**, 421-431.

Kelly BJ, King LA, Possee RD, and Chapple SD (2006): Dual mutations in the Autographa californica nucleopolyhedrovirus FP-25 and p35 genes result in plasma-membrane blebbing in Trichoplusia ni cells. *J. Gen. Virol.* **87**, 531-536.

Kelly DC, Brown DA, Ayres MD, Allen CJ, and Walker IO (1983): Properties of the Major Nucleocapsid Protein of Heliothis-Zea Singly Enveloped Nuclear Polyhedrosis-Virus. *J. Gen. Virol.* **64**, 399-408.

Kingsley DH, Behbahani A, Rashtian A, Blissard GW, and Zimmerberg J (1999): A discrete stage of baculovirus GP64-mediated membrane fusion. *Mol. Biol. Cell.* **10**, 4191-200.

Knebel-Morsdorf D, Kremer A, and Jahnel F (1993): Baculovirus gene ME53, which contains a putative zinc finger motif, is one of the major early-transcribed genes. *J. Virol.* **67**, 753-758.

Knebel-Morsdorf D, Quadt I, Li Y, Montier L, and Guarino LA (2006): Expression of baculovirus late and very late genes depends on LEF-4, a component of the viral RNA polymerase whose guanyltransferase function is essential. *J. Virol.* **80**, 4168-4173.

Kokusho R, Kawamoto M, Koyano Y, Sugano S, Suzuki Y, Shimada T, and Katsuma S (2015): Bombyx mori nucleopolyhedrovirus actin rearrangement-inducing factor 1 enhances systemic infection in B. mori larvae. *J. Gen. Virol.* **96**, 1938-1946.

Kokusho R, Koh Y, Fujimoto M, Shimada T, and Katsuma S (2016): Bombyx mori nucleopolyhedrovirus BM5 protein regulates progeny virus production and viral gene expression. *Virology* **498**, 240-249.

Kool M, Ahrens CH, Goldbach RW, Rohrmann GF, and Vlak JM (1994): Identification of genes involved in DNA replication of the Autographa californica baculovirus. *Proc. Natl. Acad. Sci. U. S. A.* **91**, 11212-11216.

Kremer A, and Knebel-Morsdorf D (1998): The early baculovirus he65 promoter: On the mechanism of transcriptional activation by IE1. *Virology* **249**, 336-351.

Kuang W, Zhang H, Wang M, Zhou NY, Deng F, Wang H, Gong P, and Hu Z (2017): Three Conserved Regions in Baculovirus Sulfhydryl Oxidase P33 Are Critical for Enzymatic Activity and Function. *J. Virol.* **91**, e01158-17.

Kuang WH, Zhang HY, Hou DH, Wang ML, Deng F, Wang HL, and Hu ZH (2016): P33 of Helicoverpa armigera single nucleocapsid nucleopolyhedrovirus is a functional homolog of AcP33. *Virol. Sin.* **31**, 346-349.

Kuzio J, Jaques R, and Faulkner P (1989): Identification of p74, a gene essential for virulence of baculovirus occlusion bodies. *Virology* **173**, 759-763.

LaCount DJ, Hanson SF, Schneider CL, and Friesen PD (2000): Caspase inhibitor P35 and inhibitor of apoptosis Op-IAP block in vivo proteolytic activation of an effector caspase at different steps. *J. Biol. Chem*. **275**, 15657-15664.

Lai QY, Wu WB, Li A, Wang W, Yuan MJ, and Yang K (2018): The 38K-Mediated Specific Dephosphorylation of the Viral Core Protein P6.9 Plays an Important Role in the

Nucleocapsid Assembly of Autographa californica Multiple Nucleopolyhedrovirus. *J. Virol.* **92**, e01989-17.

Lai QY, Xu LX, Wang YL, Luo WT, Zhu LY, Yuan MJ, Wu WB, and Yang K (2020): AcMNPV PKIP is required for hyperexpression of very late genes and involved in the hyperphosphorylation of the viral basic protein P6.9. *Virus Res*. **279**, 197889.

Lai QY, Zhu LY, Xu LX, Yuan MJ, Wu WB, and Yang K (2019): AcMNPV PKIP is associated with nucleocapsid of budded virions and involved in nucleocapsid assembly. *Virus Res*. **268**, 27-37.

Lanier LM, Slack JM, and Volkman LE (1996): Actin binding and proteolysis by the baculovirus AcMNPV: the role of virion-associated V-CATH. *Virology* **216**, 380-388.

Lanier LM, and Volkman LE (1998): Actin binding and nucleation by Autographa california M nucleopolyhedrovirus. *Virology* **243**, 167-177.

Lapointe R, Popham HJ, Straschil U, Goulding D, O'Reilly DR, and Olszewski JA (2004): Characterization of two Autographa californica nucleopolyhedrovirus proteins, Ac145 and Ac150, which affect oral infectivity in a host-dependent manner. *J. Virol.* **78**, 6439-6448.

Lee SY, Poloumienko A, Belfry S, Qu X, Chen W, MacAfee N, Morin B, Lucarotti C, and Krause M (1996): A common pathway for p10 and calyx proteins in progressive stages of polyhedron envelope assembly in AcMNPV-infected Spodoptera frugiperda larvae. *Arch. Virol*. **141**, 1247-58.

Lehiy CJ, Martinez O, and Passarelli AL (2009): Virion-associated viral fibroblast growth factor stimulates cell motility. *Virology* **395**, 152-160.

Lehiy CJ, Wu W, Berretta MF, and Passarelli AL (2013): Autographa californica M nucleopolyhedrovirus open reading frame 109 affects infectious budded virus production and nucleocapsid envelopment in the nucleus of cells. *Virology* **435**, 442-452.

Leisy DJ, and Rohrmann GF (2000): The Autographa californica nucleopolyhedrovirus IE-1 protein complex has two modes of specific DNA binding. *Virology* **274**, 196-202.

Li A, Zhao HZ, Lai QY, Huang ZH, Yuan MJ, and Yang K (2015a): Posttranslational Modifications of Baculovirus Protamine-Like Protein P6.9 and the Significance of Its Hyperphosphorylation for Viral Very Late Gene Hyperexpression. *J. Virol.* **89**, 7646-7659.

Li G, Chen H, Tang Q, Huang G, Deng R, Wang J, and Wang X (2011): Effect of ac68 knockout and lef3 leading sequence disruption on viral propagation. *Curr. Microbiol*. **62**, 191-197.

Li G, Wang J, Deng R, and Wang X (2008): Characterization of AcMNPV with a deletion of ac68 gene. *Virus Genes* **37**, 119-127.

Li GH, Qi XY, Chen HQ, Hu ZY, Chen FY, Deng L, Guo ZJ, Chen KP, and Tang Q (2019a): The Motif of (KRKCSK)-K-76 in Bm65 Is an Efficient Nuclear Localization Signal Involved in Production of Infectious Virions. *Front. Microbiol.* **10**, 2739.

Li JJ, Cao C, Fixsen SM, Young JM, Ono C, Bando H, Elde NC, Katsuma S, Dever TE, and Sicheri F (2015b): Baculovirus protein PK2 subverts eIF2alpha kinase function by mimicry of its kinase domain C-lobe. *Proc. Natl. Acad. Sci. U. S. A.* **112**, 4364-4373.

Li K, Wang Y, Bai H, Wang Q, Song J, Zhou Y, Wu C, and Chen X (2010): The putative pocket protein binding site of Autographa californica nucleopolyhedrovirus BV/ODV-C42 is required for virus-induced nuclear actin polymerization. *J. Virol.* **84**, 7857-7868.

Li L, Harwood SH, and Rohrmann GF (1999): Identification of additional genes that influence baculovirus late gene expression. *Virology* **255**, 9-19.

Li L, Li Z, Chen W, Liu C, Huang H, Yang K, and Pang Y (2006a): Characterization of Spodoptera exigua multicapsid nucleopolyhedrovirus ORF100 and ORF101, two homologues of E. coli ChaB. *Virus Res.* **121**, 42-50.

Li L, and Rohrmann GF (2000): Characterization of a baculovirus alkaline nuclease. *J. Virol.* **74**, 6401-6407.

Li S, Li L, Zhao H, and Liu W (2018a): Disruption of Autographa Californica Multiple Nucleopolyhedrovirus ac111 Results in Reduced per os Infectivity in a Host-Dependent Manner. *Viruses* **10**, 527.

Li SF, Wang ML, Shen S, Hu ZH, Wang HL, and Deng F (2015c): The FP25K Acts as a Negative Factor for the Infectivity of AcMNPV Budded Virus. *Plos One* **10**, e0128471.

Li SN, Wang JY, Yuan MJ, and Yang K (2014a): Disruption of the baculovirus core gene ac78 results in decreased production of multiple nucleocapsid-enveloped occlusion-derived virions and the failure of primary infection in vivo. *Virus Res.* **191**, 70-82.

Li XF, Yu H, Zhang CX, Chen H, and Wang D (2014b): Helicoverpa armigera nucleopolyhedrovirus orf81 is a late gene involved in budded virus production. *Arch. Virol*. **159**, 2011-2022.

Li Y, and Guarino LA (2008): Roles of LEF-4 and PTP/BVP RNA triphosphatases in processing of baculovirus late mRNAs. *J. Virol.* **82**, 5573-5583.

Li Y, and Miller LK (1995a): Expression and functional analysis of a baculovirus gene encoding a truncated protein kinase homolog. *Virology* **206**, 314-323.

Li Y, and Miller LK (1995b): Properties of a baculovirus mutant defective in the protein phosphatase gene. *J. Virol.* **69**, 4533-4537.

Li Y, Passarelli AL, and Miller LK (1993): Identification, sequence, and transcriptional mapping of lef-3, a baculovirus gene involved in late and very late gene expression. *J. Virol.* **67**, 5260-5268.

Li Y, Wang J, Deng R, Zhang Q, Yang K, and Wang X (2005): vlf-1 deletion brought AcMNPV to defect in nucleocapsid formation. *Virus Genes* **31**, 275-284.

Li YM, Shen S, Hu LB, Deng F, Vlak JM, Hu ZH, Wang HL, and Wang ML (2018b): The Functional Oligomeric State of Tegument Protein GP41 Is Essential for Baculovirus Budded Virion and Occlusion-Derived Virion Assembly. *J. Virol.* **92**, e02083-17.

Li Z, and Blissard GW (2008): Functional analysis of the transmembrane (TM) domain of the Autographa californica multicapsid nucleopolyhedrovirus GP64 protein: substitution of heterologous TM domains. *J. Virol.* **82**, 3329-3341.

Li Z, and Blissard GW (2009a): The Autographa californica multicapsid nucleopolyhedrovirus GP64 protein: analysis of transmembrane domain length and sequence requirements. *J. Virol.* **83**, 4447-4461.

Li Z, and Blissard GW (2009b): The pre-transmembrane domain of the Autographa californica multicapsid nucleopolyhedrovirus GP64 protein is critical for membrane fusion and virus infectivity. *J. Virol.* **83**, 10993-11004.

Li Z, and Blissard GW (2010): Baculovirus GP64 disulfide bonds: the intermolecular disulfide bond of Autographa californica multicapsid nucleopolyhedrovirus GP64 is not essential for membrane fusion and virion budding. *J. Virol.* **84**, 8584-8595.

Li Z, Fan Y, Wei J, Mei X, He Q, Zhang Y, Li T, Long M, Chen J, Bao J, Pan G, Li C, and Zhou Z (2019b): Baculovirus Utilizes Cholesterol Transporter NIEMANN-Pick C1 for Host Cell Entry. *Front. Microbiol.* **10**, 2825.

Li Z, Li C, Yang K, Wang L, Yin C, Gong Y, and Pang Y (2003): Characterization of a chitin-binding protein GP37 of Spodoptera litura multicapsid nucleopolyhedrovirus. *Virus Res* **96**, 113-22.

Li Z, Li L, Yu H, Li S, and Pang Y (2006b): Characterization of two homologues of ChaB in Spodoptera litura multicapsid nucleopolyhedrovirus. *Gene* **372**, 33-43.

Liang CY, Su X, Xu GD, Dai XJ, and Zhao SL (2017): Autographa californica multiple nucleopolyhedrovirus PK1 is a factor that regulates high-level expression of very late genes in viral infection. *Virology* **512**, 56-65.

Liang G, Li G, Chen K, Yao Q, Chen H, and Zhou Y (2010): Bombyx mori nucleopolyhedrovirus ORF94, a novel late protein is identified to be a component of ODV structural protein. *Curr. Microbiol*. **61**, 190-196.

Lin G, and Blissard GW (2002a): Analysis of an Autographa californica multicapsid nucleopolyhedrovirus lef-6-null virus: LEF-6 is not essential for viral replication but appears to accelerate late gene transcription. *J. Virol.* **76**, 5503-5514.

Lin G, and Blissard GW (2002b): Analysis of an Autographa californica nucleopolyhedrovirus lef-11 knockout: LEF-11 is essential for viral DNA replication. *J. Virol.* **76**, 2770-2779.

Lin L, Wang J, Deng R, Ke J, Wu H, and Wang X (2009): ac109 is required for the nucleocapsid assembly of Autographa californica multiple nucleopolyhedrovirus. *Virus Res*. **144**, 130-135.

Liu C, Li Z, Wu W, Li L, Yuan M, Pan L, Yang K, and Pang Y (2008): Autographa californica multiple nucleopolyhedrovirus ac53 plays a role in nucleocapsid assembly. *Virology* **382**, 59-68.

Liu G, and Carstens EB (1999): Site-directed mutagenesis of the AcMNPV p143 gene: effects on baculovirus DNA replication. *Virology* **253**, 125-136.

Liu TT, Li YY, Qiao B, Jiang YY, Ji N, and Li ZF (2020): Disrupting the association of Autographa californica multiple nucleopolyhedrovirus Ac93 with cellular ESCRT-III/Vps4 hinders nuclear egress of nucleocapsids and intranuclear microvesicles formation. *Virology* **541**, 85-100.

Liu X, Fang W, Fan R, Zhang L, Lei C, Zhang J, Nian W, Dou T, An S, Zhou L, and Sun X (2019): Granulovirus GP37 Facilitated ODVs Cross Insect Peritrophic Membranes and Fuse with Epithelia. *Toxins* **11**, 145.

Liu XX, Zhao HZ, Fang ZX, Yuan MJ, Yang K, and Pang Y (2012): Distribution and Phosphorylation of the Basic Protein P6.9 of Autographa californica Nucleopolyhedrovirus. *J. Virol.* **86**, 12217-12227.

Liu Y, de Jong J, Nagy E, Theilmann DA, and Krell PJ (2016): Nuclear Translocation Sequence and Region in Autographa californica Multiple Nucleopolyhedrovirus ME53 That Are Important for Optimal Baculovirus Production. *J. Virol.* **90**, 3953-3965.

Long G, Pan X, and Vlak JM (2007): Absence of N-linked glycans from the F2 subunit of the major baculovirus envelope fusion protein F enhances fusogenicity. *J. Gen. Virol.* **88**, 441-449.

Long G, Westenberg M, Wang H, Vlak JM, and Hu Z (2006): Function, oligomerization and N-linked glycosylation of the Helicoverpa armigera single nucleopolyhedrovirus envelope fusion protein. *J. Gen. Virol.* **87**, 839-846.

Lopez MG, Alfonso V, Carrillo E, and Taboga O (2011): Description of a novel single mutation in the AcMNPV polyhedrin gene that results in abnormally large cubic polyhedra. *Arch. Virol*. **156**, 695-9.

Lu A, and Miller LK (1995): The roles of eighteen baculovirus late expression factor genes in

transcription and DNA replication. *J. Virol.* **69**, 975-982.

Lu A, and Miller LK (1996): Species-specific effects of the hcf-1 gene on baculovirus virulence. *J. Virol.* **70**, 5123-5130.

Lu L, Du Q, and Chejanovsky N (2003): Reduced expression of the immediate-early protein IE0 enables efficient replication of Autographa californica multiple nucleopolyhedrovirus in poorly permissive Spodoptera littoralis cells. *J. Virol.* **77**, 535-545.

Lu L, Rivkin H, and Chejanovsky N (2005): The immediate-early protein IE0 of the Autographa californica nucleopolyhedrovirus is not essential for viral replication. *J. Virol.* **79**, 10077-10082.

Lu M, Swevers L, and Iatrou K (1998): The p95 gene of Bombyx mori nuclear polyhedrosis virus: temporal expression and functional properties. *J. Virol.* **72**, 4789-4797.

Lua LH, and Reid S (2003): Effect of time of harvest of budded virus on the selection of baculovirus FP mutants in cell culture. *Biotechnol. Prog*. **19**, 238-242.

Luckow VA, Lee SC, Barry GF, and Olins PO (1993): Efficient generation of infectious recombinant baculoviruses by site-specific transposon-mediated insertion of foreign genes into a baculovirus genome propagated in Escherichia coli. *J. Virol.* **67**, 4566-4579.

Lung OY, Cruz-Alvarez M, and Blissard GW (2003): Ac23, an envelope fusion protein homolog in the baculovirus Autographa californica multicapsid nucleopolyhedrovirus, is a viral pathogenicity factor. *J. Virol.* **77**, 328-339.

Luo XC, Wang SS, Zhang J, Qian DD, Wang SM, and Li LL (2013a): Effects of Early or Overexpression of the Autographa californica Multiple Nucleopolyhedrovirus orf94 (ODV-e25) on Virus Replication. *Plos One* **8**, e65635.

Luo XC, Yue XL, Li LL, and Li LL (2013b): Effects of mutations in the autographa californica multiple nucleopolyhedrovirus E25 on its trafficking to nucleus and budded virus production. *Bing Du Xue Bao* **29**, 535-543.

Maeda S, Kawai T, Obinata M, Fujiwara H, Horiuchi T, Saeki Y, Sato Y, and Furusawa M (1985): Production of human alpha-interferon in silkworm using a baculovirus vector. *Nature* **315**, 592-594.

Makino S, Hamajima R, Saito A, Tomizaki M, Iwamoto A, Kobayashi M, Yamada H, and Ikeda M (2018): Bombyx mori homolog of tumor suppressor p53 is involved in apoptosis-mediated antiviral immunity of B-mori cells infected with nucleopolyhedrovirus. *Dev. Comp. Immunol.* **84**, 133-141.

Marek M, Merten OW, Galibert L, Vlak JM, and van Oers MM (2011): Baculovirus VP80 protein and the F-actin cytoskeleton interact and connect the viral replication factory with the nuclear periphery. *J. Virol.* **85**, 5350-5362.

Marek M, Romier C, Galibert L, Merten OW, and van Oers MM (2013): Baculovirus VP1054 Is an Acquired Cellular PUR alpha, a Nucleic Acid-Binding Protein Specific for GGN Repeats. *J. Virol.* **87**, 8465-8480.

Martins A, and Shuman S (2001): Mutational analysis of baculovirus capping enzyme Lef4 delineates an autonomous triphosphatase domain and structural determinants of divalent cation specificity. *J. Biol. Chem*. **276**, 45522-45529.

Martins A, and Shuman S (2002): The domain order of mammalian capping enzyme can be inverted and baculovirus phosphatase can function in cap formation in vivo. *Virology* **304**, 167-175.

McCarthy CB, Dai X, Donly C, and Theilmann DA (2008): Autographa californica multiple

nucleopolyhedrovirus ac142, a core gene that is essential for BV production and ODV envelopment. *Virology* **372**, 325-339.

McCarthy CB, and Theilmann DA (2008): AcMNPV ac143 (odv-e18) is essential for mediating budded virus production and is the 30th baculovirus core gene. *Virology* **375**, 277-291.

McDougal VV, and Guarino LA (2001): DNA and ATP binding activities of the baculovirus DNA helicase P143. *J. Virol.* **75**, 7206-7209.

McLachlin JR, Yang S, and Miller LK (1998): A baculovirus mutant defective in PKIP, a protein which interacts with a virus-encoded protein kinase. *Virology* **246**, 379-391.

Means JC, and Passarelli AL (2010): Viral fibroblast growth factor, matrix metalloproteases, and caspases are associated with enhancing systemic infection by baculoviruses. *Proc. Natl. Acad. Sci. U. S. A.* **107**, 9825-9830.

Mehrabadi M, Hussain M, Matindoost L, and Asgari S (2015): The Baculovirus Antiapoptotic p35 Protein Functions as an Inhibitor of the Host RNA Interference Antiviral Response. *J. Virol.* **89**, 8182-8192.

Merrington CL, Kitts PA, King LA, and Possee RD (1996): An Autographa californica nucleopolyhedrovirus lef-2 mutant: consequences for DNA replication and very late gene expression. *Virology* **217**, 338-348.

Miao Y, Liang A, and Fu Y (2016): Baculovirus antiapoptotic protein P35 regulated the host apoptosis to enhance virus multiplication. *Mol. Cell. Biochem*. **423**, 67-73.

Mikhailov VS, Mikhailova AL, Iwanaga M, Gomi S, and Maeda S (1998): Bombyx mori nucleopolyhedrovirus encodes a DNA-binding protein capable of destabilizing duplex DNA. *J. Virol.* **72**, 3107-3116.

Mikhailov VS, Okano K, and Rohrmann GF (2005): The redox state of the baculovirus single-stranded DNA-binding protein LEF-3 regulates its DNA binding, unwinding, and annealing activities. *J. Biol. Chem*. **280**, 29444-29453.

Mikhailov VS, Okano K, and Rohrmann GF (2006): Structural and functional analysis of the baculovirus single-stranded DNA-binding protein LEF-3. *Virology* **346**, 469-478.

Mikhailov VS, and Rohrmann GF (2002a): Baculovirus replication factor LEF-1 is a DNA primase. *J. Virol.* **76**, 2287-2297.

Mikhailov VS, and Rohrmann GF (2002b): Binding of the baculovirus very late expression factor 1 (VLF-1) to different DNA structures. *BMC Mol. Biol*. **3**, 14.

Mikhailov VS, Vanarsdall AL, and Rohrmann GF (2008): Isolation and characterization of the DNA-binding protein (DBP) of the Autographa californica multiple nucleopolyhedrovirus. *Virology* **370**, 415-429.

Milks ML, Washburn JO, Willis LG, Volkman LE, and Theilmann DA (2003): Deletion of pe38 attenuates AcMNPV genome replication, budded virus production, and virulence in heliothis virescens. *Virology* **310**, 224-234.

Mishra G, Chadha P, Chaudhury I, and Das RH (2008a): Inhibition of Autographa californica nucleopolyhedrovirus (AcNPV) polyhedrin gene expression by DNAzyme knockout of its serine/threonine kinase (pk1) gene. *Virus Res*. **135**, 197-201.

Mishra G, Chadha P, and Das RH (2008b): Serine/threonine kinase (pk-1) is a component of Autographa californica multiple nucleopolyhedrovirus (AcMNPV) very late gene transcription complex and it phosphorylates a 102 kDa polypeptide of the complex. *Virus Res*. **137**, 147-149.

Mishra G, Gautam HK, and Das RH (2007): Serine/Threonine kinase dependent transcription from the polyhedrin promoter of SpltNPV-I. *Biochem. Biophys. Res. Commun*. **358**, 942-947.

Mitchell JK, Byers NM, and Friesen PD (2013): Baculovirus F-box protein LEF-7 modifies the host DNA damage response to enhance virus multiplication. *J. Virol.* **87**, 12592-12599.

Monsma SA, and Blissard GW (1995): Identification of a membrane fusion domain and an oligomerization domain in the baculovirus GP64 envelope fusion protein. *J. Virol.* **69**, 2583-2595.

Monsma SA, Oomens AG, and Blissard GW (1996): The GP64 envelope fusion protein is an essential baculovirus protein required for cell-to-cell transmission of infection. *J. Virol.* **70**, 4607-4616.

Morris TD, Todd JW, Fisher B, and Miller LK (1994): Identification of lef-7: a baculovirus gene affecting late gene expression. *Virology* **200**, 360-369.

Mu J, Zhang Y, Hu Y, Hu X, Zhou Y, Chen X, and Wang Y (2016a): The role of viral protein Ac34 in nuclear relocation of subunits of the actin-related protein 2/3 complex. *Virol. Sin.* **31**, 480-489.

Mu J, Zhang Y, Hu Y, Hu X, Zhou Y, Zhao H, Pei R, Wu C, Chen J, Zhao H, Yang K, Oers MM, Chen X, and Wang Y (2016b): Autographa californica Multiple Nucleopolyhedrovirus Ac34 Protein Retains Cellular Actin-Related Protein 2/3 Complex in the Nucleus by Subversion of CRM1-Dependent Nuclear Export. *PLoS Pathog*. **12**, e1005994.

Nagamine T, Kawasaki Y, Iizuka T, and Matsumoto S (2005): Focal distribution of baculovirus IE1 triggered by its binding to the hr DNA elements. *J. Virol.* **79**, 39-46.

Nakanishi T, Goto C, Kobayashi M, Kang W, Suzuki T, Dohmae N, Matsumoto S, Shimada T, and Katsuma S (2010): Comparative studies of lepidopteran baculovirus-specific protein FP25K: development of a novel Bombyx mori nucleopolyhedrovirus-based vector with a modified fp25K gene. *J. Virol.* **84**, 5191-200.

Nan H, Chen HY, Tuite MF, and Xu XD (2019): A viral expression factor behaves as a prion. *Nat. Commun.* **10**, 359.

Nie Y, Fang M, Erlandson MA, and Theilmann DA (2012): Analysis of the Autographa californica Multiple Nucleopolyhedrovirus Overlapping Gene Pair lef3 and ac68 Reveals that AC68 Is a Per Os Infectivity Factor and that LEF3 Is Critical, but Not Essential, for Virus Replication. *J. Virol.* **86**, 3985-3994.

Nie Y, Fang M, and Theilmann DA (2009): AcMNPV AC16 (DA26, BV/ODV-E26) regulates the levels of IE0 and IE1 and binds to both proteins via a domain located within the acidic transcriptional activation domain. *Virology* **385**, 484-495.

Nie Y, and Theilmann DA (2010): Deletion of AcMNPV AC16 and AC17 results in delayed viral gene expression in budded virus infected cells but not transfected cells. *Virology* **404**, 168-179.

O'Reilly DR (1999): The baculovirus EGT gene. *RIKEN REVIEW*, 17-19.

O'Reilly DR, and Miller LK (1989): A baculovirus blocks insect molting by producing ecdysteroid UDP-glucosyl transferase. *Science* **245**, 1110-1112.

O'Reilly DR, and Miller LK (1990): Regulation of expression of a baculovirus ecdysteroid UDPglucosyltransferase gene. *J. Virol.* **64**, 1321-1328.

O'Reilly DR, Passarelli AL, Goldman IF, and Miller LK (1990): Characterization of the DA26 gene in a hypervariable region of the Autographa californica nuclear polyhedrosis virus genome. *J. Gen. Virol.* **71**, 1029-1037.

Ohkawa T, Volkman LE, and Welch MD (2010): Actin-based motility drives baculovirus transit to the nucleus and cell surface. *J. Cell. Biol.* **190**, 187-195.

Ohkawa T, Washburn JO, Sitapara R, Sid E, and Volkman LE (2005): Specific binding of Autographa californica M nucleopolyhedrovirus occlusion-derived virus to midgut cells of Heliothis virescens larvae is mediated by products of pif genes Ac119 and Ac022 but not by Ac115. *J. Virol.* **79**, 15258-15264.

Ohkawa T, and Welch MD (2018): Baculovirus Actin-Based Motility Drives Nuclear Envelope Disruption and Nuclear Egress. *Curr. Biol*. **28**, 2153-2159.

Okano K, Mikhailov VS, and Maeda S (1999): Colocalization of baculovirus IE-1 and two DNA-binding proteins, DBP and LEF-3, to viral replication factories. *J. Virol.* **73**, 110-119.

Okano K, Vanarsdall AL, and Rohrmann GF (2004): Characterization of a baculovirus lacking the alkaline nuclease gene. *J. Virol.* **78**, 10650-10656.

Okano K, Vanarsdall AL, and Rohrmann GF (2007): A baculovirus alkaline nuclease knockout construct produces fragmented DNA and aberrant capsids. *Virology* **359**, 46-54.

Olson VA, Wetter JA, and Friesen PD (2002): Baculovirus transregulator IE1 requires a dimeric nuclear localization element for nuclear import and promoter activation. *J. Virol.* **76**, 9505-9515.

Olson VA, Wetter JA, and Friesen PD (2003): The highly conserved basic domain I of baculovirus IE1 is required for hr enhancer DNA binding and hr-dependent transactivation. *J. Virol.* **77**, 5668-5677.

Olszewski J, and Miller LK (1997a): Identification and characterization of a baculovirus structural protein, VP1054, required for nucleocapsid formation. *J. Virol.* **71**, 5040-5050.

Olszewski J, and Miller LK (1997b): A role for baculovirus GP41 in budded virus production. *Virology* **233**, 292-301.

Ono C, Kamagata T, Taka H, Sahara K, Asano S, and Bando H (2012): Phenotypic grouping of 141 BmNPVs lacking viral gene sequences. *Virus Res.* **165**, 197-206.

Partington S, Yu H, Lu A, and Carstens EB (1990): Isolation of temperature sensitive mutants of Autographa californica nuclear polyhedrosis virus: phenotype characterization of baculovirus mutants defective in very late gene expression. *Virology* **175**, 91-102.

Passarelli AL, and Miller LK (1993): Three baculovirus genes involved in late and very late gene expression: ie-1, ie-n, and lef-2. *J. Virol.* **67**, 2149-2158.

Passarelli AL, and Miller LK (1994a): Identification and transcriptional regulation of the baculovirus lef-6 gene. *J. Virol.* **68**, 4458-4467.

Passarelli AL, and Miller LK (1994b): In vivo and in vitro analyses of recombinant baculoviruses lacking a functional cg30 gene. *J. Virol.* **68**, 1186-1190.

Passarelli AL, Todd JW, and Miller LK (1994): A baculovirus gene involved in late gene expression predicts a large polypeptide with a conserved motif of RNA polymerases. *J. Virol.* **68**, 4673-4678.

Patmanidi AL, Possee RD, and King LA (2003): Formation of P10 tubular structures during AcMNPV infection depends on the integrity of host-cell microtubules. *Virology* **317**, 308-320.

Pearson MN, Russell RL, Rohrmann GF, and Beaudreau GS (1988): p39, a major baculovirus structural protein: immunocytochemical characterization and genetic location. *Virology* **167**, 407-413.

Peng K, van Lent JW, Boeren S, Fang M, Theilmann DA, Erlandson MA, Vlak JM, and van Oers MM (2012): Characterization of novel components of the baculovirus per os infectivity factor complex. *J. Virol.* **86**, 4981-4988.

Peng K, van Oers MM, Hu Z, van Lent JW, and Vlak JM (2010): Baculovirus per os infectivity factors form a complex on the surface of occlusion-derived virus. *J. Virol.* **84**, 9497-9504.

Prikhod'ko EA, Lu A, Wilson JA, and Miller LK (1999a): In vivo and in vitro analysis of baculovirus ie-2 mutants. *J. Virol.* **73**, 2460-2468.

Prikhod'ko EA, and Miller LK (1998): Role of baculovirus IE2 and its RING finger in cell cycle arrest. *J. Virol.* **72**, 684-692.

Prikhod'ko EA, and Miller LK (1999): The baculovirus PE38 protein augments apoptosis induced by transactivator IE1. *J. Virol.* **73**, 6691-6699.

Prikhod'ko GG, Wang Y, Freulich E, Prives C, and Miller LK (1999b): Baculovirus p33 binds human p53 and enhances p53-mediated apoptosis. *J. Virol.* **73**, 1227-1234.

Qiu J, Tang Z, Yuan M, Wu W, and Yang K (2017): The 91-205 amino acid region of AcMNPV ORF34 (Ac34), which comprises a potential C3H zinc finger, is required for its nuclear localization and optimal virus multiplication. *Virus Res*. **228**, 79-89.

Qiu JX, Tang ZM, Cai Y, Wu WB, Yuan MJ, and Yang K (2019): The Autographa californica Multiple Nucleopolyhedrovirus ac51 Gene Is Required for Efficient Nuclear Egress of Nucleocapsids and Is Essential for In Vivo Virulence. *J. Virol.* **93**, e01923-18.

Quadt I, van Lent JW, and Knebel-Morsdorf D (2007): Studies of the silencing of baculovirus DNA binding protein. *J. Virol.* **81**, 6122-6127.

Rapp JC, Wilson JA, and Miller LK (1998): Nineteen baculovirus open reading frames, including LEF-12, support late gene expression. *J. Virol.* **72**, 10197-10206.

Raynes DA, Hartshorne DJ, and Guerriero V, Jr. (1994): Sequence and expression of a baculovirus protein with antigenic similarity to telokin. *J. Gen. Virol.* **75**, 1807-1809.

Raza F, McGouran JF, Kessler BM, Possee RD, and King LA (2017): Phosphorylation Induces Structural Changes in the Autographa californica Nucleopolyhedrovirus P10 Protein. *J. Virol.* **91**, e00002-17.

Reilly LM, and Guarino LA (1996): The viral ubiquitin gene of Autographa californica nuclear polyhedrosis virus is not essential for viral replication. *Virology* **218**, 243-247.

Rohrmann GF (1986): Polyhedrin structure. *J. Gen. Virol.* **67**, 1499-1513.

Roncarati R, and Knebel-Morsdorf D (1997): Identification of the early actin-rearrangement-inducing factor gene, arif-1, from Autographa californica multicapsid nuclear polyhedrosis virus. *J. Virol.* **71**, 7933-7941.

Rosas-Acosta G, Braunagel SC, and Summers MD (2001): Effects of deletion and overexpression of the Autographa californica nuclear polyhedrosis virus FP25K gene on synthesis of two occlusion-derived virus envelope proteins and their transport into virus-induced intranuclear membranes. *J. Virol.* **75**, 10829-10842.

Russell RL, and Rohrmann GF (1997): Characterization of P91, a protein associated with virions of an Orgyia pseudotsugata baculovirus. *Virology* **233**, 210-223.

Saksena S, Summers MD, Burks JK, Johnson AE, and Braunagel SC (2006): Importin-alpha-16 is a translocon-associated protein involved in sorting membrane proteins to the nuclear envelope. *Nat. Struct. Mol. Biol*. **13**, 500-508.

Saville GP, Patmanidi AL, Possee RD, and King LA (2004): Deletion of the Autographa californica

nucleopolyhedrovirus chitinase KDEL motif and in vitro and in vivo analysis of the modified virus. *J. Gen. Virol.* **85**, 821-831.

Saville GP, Thomas CJ, Possee RD, and King LA (2002): Partial redistribution of the Autographa californica nucleopolyhedrovirus chitinase in virus-infected cells accompanies mutation of the carboxy-terminal KDEL ER-retention motif. *J. Gen. Virol.* **83**, 685-694.

Schetter C, Oellig C, and Doerfler W (1990): An insertion of insect cell DNA in the 81-map-unit segment of Autographa californica nuclear polyhedrosis virus DNA. *J. Virol.* **64**, 1844-1850.

Schultz KL, Wetter JA, Fiore DC, and Friesen PD (2009): Transactivator IE1 is required for baculovirus early replication events that trigger apoptosis in permissive and nonpermissive cells. *J. Virol.* **83**, 262-272.

Sehrawat S, Srinivasan N, and Gopinathan KP (2002): Functional characterization and structural modelling of late gene expression factor 4 from Bombyx mori nucleopolyhedrovirus. *Biochem. J*. **368**, 159-169.

Shao W, He L, Chen Q, Li J, Deng F, Wang H, Hu Z, and Wang M (2019): Functional Characterization of the Group I Alphabaculovirus Specific Gene ac73. *Virol. Sin.* **34**, 701-711.

Shen H, Chen K, Yao Q, Yu W, Pan Y, Huo J, Xia H, and Huang G (2009a): Characterization of Bombyx mori nucleopolyhedrovirus orf74, a novel gene involved in virulence of virus. *Virus Genes* **38**, 487-494.

Shen H, Chen K, Yao Q, and Zhou Y (2009b): Characterization of the Bm61 of the Bombyx mori nucleopolyhedrovirus. *Curr. Microbiol*. **59**, 65-70.

Shen H, Zhou Y, Zhang W, Nin B, Wang H, Wang X, Shao S, Chen H, Guo Z, Liu X, Yao Q, and Chen K (2012): Characterization of Bombyx mori nucleopolyhedrovirus with a knockout of Bm17. *Cytotechnology* **64**, 711-718.

Shen Y, Wang H, Xu W, and Wu X (2018a): Bombyx mori nucleopolyhedrovirus orf133 and orf134 are involved in the embedding of occlusion-derived viruses into polyhedra. *J. Gen. Virol.* **99**, 717-729.

Shen YW, Feng M, and Wu XF (2018b): Bombyx mori nucleopolyhedrovirus ORF40 is essential for budded virus production and occlusion-derived virus envelopment. *J. Gen. Virol.* **99**, 837-850.

Sheng Z, and Charbonneau H (1993): The baculovirus Autographa californica encodes a protein tyrosine phosphatase. *J. Biol. Chem*. **268**, 4728-4733.

Shi AQ, Hu ZY, Zuo YC, Wang Y, Wu WB, Yuan MJ, and Yang K (2018): Autographa californica Multiple Nucleopolyhedrovirus ac75 Is Required for the Nuclear Egress of Nucleocapsids and Intranuclear Microvesicle Formation. *J. Virol.* **92**, e0185630.

Shi Y, Zhang C, Xie C, Quan Y, Nie Z, Chen J, Lv Z, Zhang Y, and Yu W (2015): The effect of BM67 gene deletion on Bombyx mori nuclear polyhedrosis virus replication. *Acta. Virol.* **59**, 40-48.

Shikata M, Shibata H, Sakurai M, Sano Y, Hashimoto Y, and Matsumoto T (1998): The ecdysteroid UDP-glucosyltransferase gene of Autographa californica nucleopolyhedrovirus alters the moulting and metamorphosis of a non-target insect, the silkworm, Bombyx mori (Lepidoptera, Bombycidae). *J. Gen. Virol.* **79**, 1547-1551.

Simon O, Palma L, Williams T, Lopez-Ferber M, and Caballero P (2012): Analysis of a naturally-occurring deletion mutant of Spodoptera frugiperda multiple nucleopolyhedrovirus reveals sf58 as a new per os infectivity factor of lepidopteran-infecting baculoviruses. *J.*

Invertebr. Pathol. **109**, 117-126.

Simon O, Williams T, Caballero P, and Possee RD (2008): Effects of Acp26 on in vitro and in vivo productivity, pathogenesis and virulence of Autographa californica multiple nucleopolyhedrovirus. *Virus Res.* **136**, 202-205.

Smith GE, Fraser MJ, and Summers MD (1983): Molecular Engineering of the Autographa californica Nuclear Polyhedrosis Virus Genome: Deletion Mutations Within the Polyhedrin Gene. *J. Virol.* **46**, 584-593.

Song J, Wang R, Deng F, Wang H, and Hu Z (2008): Functional studies of per os infectivity factors of Helicoverpa armigera single nucleocapsid nucleopolyhedrovirus. *J. Gen. Virol.* **89**, 2331-2338.

Sparks WO, Harrison RL, and Bonning BC (2011): Autographa californica multiple nucleopolyhedrovirus ODV-E56 is a per os infectivity factor, but is not essential for binding and fusion of occlusion-derived virus to the host midgut. *Virology* **409**, 69-76.

Stewart TM, Huijskens I, Willis LG, and Theilmann DA (2005): The Autographa californica multiple nucleopolyhedrovirus ie0-ie1 gene complex is essential for wild-type virus replication, but either IE0 or IE1 can support virus growth. *J. Virol.* **79**, 4619-4629.

Su J, Lung O, and Blissard GW (2011): The Autographa californica multiple nucleopolyhedrovirus lef-5 gene is required for productive infection. *Virology* **416**, 54-64.

Sugiura N, Setoyama Y, Chiba M, Kimata K, and Watanabe H (2011): Baculovirus envelope protein ODV-E66 is a novel chondroitinase with distinct substrate specificity. *J. Biol. Chem.* **286**, 29026-29034.

Tachibana A, Hamajima R, Tomizaki M, Kondo T, Nanba Y, Kobayashi M, Yamada H, and Ikeda M (2017): HCF-1 encoded by baculovirus AcMNPV is required for productive nucleopolyhedrovirus infection of non-permissive Tn368 cells. *Sci. Rep.* **7**, 3807.

Takagi T, Taylor GS, Kusakabe T, Charbonneau H, and Buratowski S (1998): A protein tyrosine phosphatase-like protein from baculovirus has RNA 5'-triphosphatase and diphosphatase activities. *Proc. Natl. Acad. Sci. U. S. A.* **95**, 9808-9812.

Tan Y, Jiang L, Wang M, Yin F, Deng F, Liu M, Hu Z, and Wang H (2008): Mutagenesis and nuclear magnetic resonance analyses of the fusion peptide of Helicoverpa armigera single nucleocapsid nucleopolyhedrovirus F protein. *J. Virol.* **82**, 8138-8148.

Tang Q, Hu Z, Yang Y, Wu H, Qiu L, Chen K, and Li G (2015): Overexpression of Bm65 correlates with reduced susceptibility to inactivation by UV light. *J. Invertebr. Pathol.* **127**, 87-92.

Tang Q, Li G, Yao Q, Chen L, Lv P, Lian C, and Chen K (2013): Bm91 is an envelope component of ODV but is dispensable for the propagation of Bombyx mori nucleopolyhedrovirus. *J. Invertebr. Pathol.* **113**, 70-77.

Tang Q, Wu P, Hu Z, Yang Y, Qiu L, Liu H, Zhu S, Guo Z, Xia H, Chen K, and Li G (2017): Evidence for the role of BmNPV Bm65 protein in the repair of ultraviolet-induced DNA damage. *J. Invertebr. Pathol.* **149**, 82-86.

Tang XD, Xu YP, Yu LL, Lang GJ, Tian CH, Zhao JF, and Zhang CX (2008): Characterization of a Bombyx mori nucleopolyhedrovirus with Bmvp80 disruption. *Virus Res.* **138**, 81-8.

Tao XY, Choi JY, Kim WJ, An SB, Liu Q, Kim SE, Lee SH, Kim JH, Woo SD, Jin BR, and Je YH (2015): Autographa californica Multiple Nucleopolyhedrovirus ORF11 Is Essential for Budded-Virus Production and Occlusion-Derived-Virus Envelopment. *J. Virol.* **89**, 373-383.

Tao XY, Choi JY, Kim WJ, Lee JH, Liu Q, Kim SE, An SB, Lee SH, Woo SD, Jin BR, and Je YH

(2013a): The Autographa californica multiple nucleopolyhedrovirus ORF78 is essential for budded virus production and general occlusion body formation. *J. Virol.* **87**, 8441-8450.

Tao XY, Choi JY, Wang Y, Roh JY, Lee JH, Liu Q, Park JB, Kim JS, Kim W, and Je YH (2013b): Functional characterization of Autographa californica multiple nucleopolyhedrovirus ORF43 and phenotypic changes of ORF43-knockout mutant. *J. Microbiol*. **51**, 515-521.

Thiem SM, and Miller LK (1989a): A baculovirus gene with a novel transcription pattern encodes a polypeptide with a zinc finger and a leucine zipper. *J. Virol.* **63**, 4489-97.

Thiem SM, and Miller LK (1989b): Identification, sequence, and transcriptional mapping of the major capsid protein gene of the baculovirus Autographa californica nuclear polyhedrosis virus. *J. Virol.* **63**, 2008-2018.

Tian CH, Tang XD, Xu HJ, Ge JQ, Miao YG, and Zhang CX (2009a): Bombyx mori nucleopolyhedrovirus ORF51 encodes a budded virus envelope associated protein. *Virus Genes* **38**, 171-177.

Tian CH, Zhao JF, Xu YP, Xue J, Zhang BQ, Cui YJ, Zhang MJ, Bao YY, and Zhang CX (2009b): Involvement of Bombyx mori nucleopolyhedrovirus ORF41 (Bm41) in BV production and ODV envelopment. *Virology* **387**, 184-192.

Titterington JS, Nun TK, and Passarelli AL (2003): Functional dissection of the baculovirus late expression factor-8 gene: sequence requirements for late gene promoter activation. *J. Gen. Virol.* **84**, 1817-1826.

Todd JW, Passarelli AL, Lu A, and Miller LK (1996): Factors regulating baculovirus late and very late gene expression in transient-expression assays. *J. Virol.* **70**, 2307-2317.

Tomalski MD, Eldridge R, and Miller LK (1991): A baculovirus homolog of a Cu/Zn superoxide dismutase gene. *Virology* **184**, 149-161.

Tong C, Xiaoyan D, Hengrui H, Yu S, Yangbo H, Fei D, Hualin W, Manli W, and Zhihong H (2021): Systematic Analysis of 42 Autographa Californica Multiple Nucleopolyhedrovirus Genes Identifies An Additional Six Genes Involved in the Production of Infectious Budded Virus. *Virol. Sin.* **36**, 762-773

Tung H, Wei SC, Lo HR, and Chao YC (2016): Baculovirus IE2 Stimulates the Expression of Heat Shock Proteins in Insect and Mammalian Cells to Facilitate Its Proper Functioning. *Plos One* **11**, e0148578.

Tweeten KA, Bulla LA, and Consigli RA (1980): Characterization of an Extremely Basic Protein Derived from Granulosis Virus Nucleocapsids. *J. Virol.* **33**, 866-876.

van Oers MM, Flipsen JT, Reusken CB, Sliwinsky EL, Goldbach RW, and Vlak JM (1993): Functional domains of the p10 protein of Autographa californica nuclear polyhedrosis virus. *J. Gen. Virol.* **74**, 563-574.

Vanarsdall AL, Mikhailov VS, and Rohrmann GF (2007a): Characterization of a baculovirus lacking the DBP (DNA-binding protein) gene. *Virology* **364**, 475-485.

Vanarsdall AL, Okano K, and Rohrmann GF (2005): Characterization of the replication of a baculovirus mutant lacking the DNA polymerase gene. *Virology* **331**, 175-180.

Vanarsdall AL, Okano K, and Rohrmann GF (2006): Characterization of the role of very late expression factor 1 in baculovirus capsid structure and DNA processing. *J. Virol.* **80**, 1724-1733.

Vanarsdall AL, Pearson MN, and Rohrmann GF (2007b): Characterization of baculovirus constructs lacking either the Ac 101, Ac 142, or the Ac 144 open reading frame. *Virology* **367**, 187-195.

Wang F, Xue RJ, Li XY, Hu CM, and Xia QY (2016): Characterization of a protein tyrosine phosphatase as a host factor promoting baculovirus replication in silkworm, Bombyx mori. *Dev. Comp. Immunol.* **57**, 31-37.

Wang H, Deng F, Pijlman GP, Chen X, Sun X, Vlak JM, and Hu Z (2003): Cloning of biologically active genomes from a Helicoverpa armigera single-nucleocapsid nucleopolyhedrovirus isolate by using a bacterial artificial chromosome. *Virus Res.* **97**, 57-63.

Wang H, Xu W, Kong X, Fan Y, and Wu X (2019a): Bombyx mori nucleopolyhedrovirus protein Bm11 is involved in occlusion body production and occlusion-derived virus embedding. *Virology* **527**, 12-20.

Wang L, Salem TZ, Campbell DJ, Turney CM, Kumar CM, and Cheng XW (2009): Characterization of a virion occlusion-defective Autographa californica multiple nucleopolyhedrovirus mutant lacking the p26, p10 and p74 genes. *J. Gen. Virol.* **90**, 1641-1648.

Wang L, Yu J, Yin C, Li Z, Hu X, and Pang Y (2002): Characterization of a J domain gene of Spodoptera litura multicapsid nucleopolyhedrovirus. *Virus Genes* **25**, 291-297.

Wang M, Tan Y, Yin F, Deng F, Vlak JM, Hu Z, and Wang H (2008a): The F-like protein Ac23 enhances the infectivity of the budded virus of gp64-null Autographa californica multinucleocapsid nucleopolyhedrovirus pseudotyped with baculovirus envelope fusion protein F. *J. Virol.* **82**, 9800-9804.

Wang M, Tan Y, Yin F, Deng F, Vlak JM, Hu Z, and Wang H (2008b): The F protein of Helicoverpa armigera single nucleopolyhedrovirus can be substituted functionally with its homologue from Spodoptera exigua multiple nucleopolyhedrovirus. *J. Gen. Virol.* **89**, 791-798.

Wang M, Tuladhar E, Shen S, Wang H, van Oers MM, Vlak JM, and Westenberg M (2010a): Specificity of baculovirus P6.9 basic DNA-binding proteins and critical role of the C terminus in virion formation. *J. Virol.* **84**, 8821-8828.

Wang M, Yin F, Shen S, Tan Y, Deng F, Vlak JM, Hu Z, and Wang H (2010b): Partial functional rescue of Helicoverpa armigera single nucleocapsid nucleopolyhedrovirus infectivity by replacement of F protein with GP64 from Autographa californica multicapsid nucleopolyhedrovirus. *J. Virol.* **84**, 11505-11514.

Wang Q, Wang Y, Liang C, Song J, and Chen X (2008c): Identification of a hydrophobic domain of HA2 essential to morphogenesis of Helicoverpa armigera nucleopolyhedrovirus. *J. Virol.* **82**, 4072-4081.

Wang R, Deng F, Hou D, Zhao Y, Guo L, Wang H, and Hu Z (2010c): Proteomics of the Autographa californica nucleopolyhedrovirus budded virions. *J. Virol*. **84**, 7233-7242.

Wang X, Chen C, Zhang N, Li J, Deng F, Wang H, Vlak JM, Hu Z, and Wang M (2018): The group I alphabaculovirus-specific protein, AC5, is a novel component of the occlusion body but is not associated with ODVs or the PIF complex. *J. Gen. Virol.* **99**, 585-595.

Wang X, Shang Y, Chen C, Liu S, Chang M, Zhang N, Hu H, Zhang F, Zhang T, Wang Z, Liu X, Lin Z, Deng F, Wang H, Zou Z, Vlak JM, Wang M, and Hu Z (2019b): Baculovirus Per Os Infectivity Factor Complex: Components and Assembly. *J. Virol.* **93**, e02053-18.

Wang Y, Cai QY, Chen JN, Huang ZH, Wu WB, Yuan MJ, and Yang K (2019c): Autographa Californica Multiple Nucleopolyhedrovirus P48 (Ac103) Is Required for the Efficient Formation of Virus-Induced Intranuclear Microvesicles. *Virol. Sin.* **34**, 712-721.

Wang Y, Wang Q, Liang C, Song J, Li N, Shi H, and Chen X (2008d): Autographa californica multiple nucleopolyhedrovirus nucleocapsid protein BV/ODV-C42 mediates the nuclear

entry of P78/83. *J. Virol.* **82**, 4554-4561.

Wang Y, Wu W, Li Z, Yuan M, Feng G, Yu Q, Yang K, and Pang Y (2007): ac18 is not essential for the propagation of Autographa californica multiple nucleopolyhedrovirus. *Virology* **367**, 71-81.

Wang Y, Zhang Y, Han S, Hu X, Zhou Y, Mu J, Pei R, Wu C, and Chen X (2015): Identification of a novel regulatory sequence of actin nucleation promoting factor encoded by Autographa californica multiple nucleopolyhedrovirus. *J. Biol. Chem*. **290**, 9533-9541.

Wei D, Wang Y, Zhang X, Hu Z, Yuan M, and Yang K (2014): Autographa californica Nucleopolyhedrovirus Ac76: a dimeric type II integral membrane protein that contains an inner nuclear membrane-sorting motif. *J. Virol.* **88**, 1090-1103.

Wei W, Zhou Y, Lei C, and Sun X (2012): Autographa californica multiple nucleopolyhedrovirus orf114 is not essential for virus replication in vitro, but its knockout reduces per os infectivity in vivo. *Virus Genes* **45**, 360-369.

Whitford M, Stewart S, Kuzio J, and Faulkner P (1989): Identification and sequence analysis of a gene encoding gp67, an abundant envelope glycoprotein of the baculovirus Autographa californica nuclear polyhedrosis virus. *J. Virol.* **63**, 1393-1399.

Whitt MA, and Manning JS (1988): A phosphorylated 34-kDa protein and a subpopulation of polyhedrin are thiol linked to the carbohydrate layer surrounding a baculovirus occlusion body. *Virology* **163**, 33-42.

Wilson JA, Forney SD, Ricci AM, Allen EG, Hefferon KL, and Miller LK (2005): Expression and mutational analysis of Autographa californica nucleopolyhedrovirus HCF-1: functional requirements for cysteine residues. *J. Virol.* **79**, 13900-13914.

Wilson ME, Mainprize TH, Friesen PD, and Miller LK (1987): Location, transcription, and sequence of a baculovirus gene encoding a small arginine-rich polypeptide. *J. Virol.* **61**, 661-666.

Wilson ME, and Price KH (1988): Association of Autographa californica nuclear polyhedrosis virus (AcMNPV) with the nuclear matrix. *Virology* **167**, 233-241.

Wu CP, Huang YJ, Wang JY, Wu YL, Lo HR, Wang JC, and Chao YC (2010): Autographa californica multiple nucleopolyhedrovirus LEF-2 is a capsid protein required for amplification but not initiation of viral DNA replication. *J. Virol.* **84**, 5015-5024.

Wu D, Deng F, Sun X, Wang H, Yuan L, Vlak JM, and Hu Z (2005): Functional analysis of FP25K of Helicoverpa armigera single nucleocapsid nucleopolyhedrovirus. *J. Gen. Virol.* **86**, 2439-2444.

Wu W, Clem RJ, Rohrmann GF, and Passarelli AL (2013): The baculovirus sulfhydryl oxidase Ac92 (P33) interacts with the Spodoptera frugiperda P53 protein and oxidizes it in vitro. *Virology* **447**, 197-207.

Wu W, Liang H, Kan J, Liu C, Yuan M, Liang C, Yang K, and Pang Y (2008): Autographa californica multiple nucleopolyhedrovirus 38K is a novel nucleocapsid protein that interacts with VP1054, VP39, VP80, and itself. *J. Virol.* **82**, 12356-12364.

Wu W, Lin T, Pan L, Yu M, Li Z, Pang Y, and Yang K (2006): Autographa californica multiple nucleopolyhedrovirus nucleocapsid assembly is interrupted upon deletion of the 38K gene. *J. Virol.* **80**, 11475-11485.

Wu W, and Passarelli AL (2010): Autographa californica multiple nucleopolyhedrovirus Ac92 (ORF92, P33) is required for budded virus production and multiply enveloped occlusion-derived virus formation. *J. Virol.* **84**, 12351-12361.

Wu W, and Passarelli AL (2012): The Autographa californica M nucleopolyhedrovirus ac79 gene encodes an early gene product with structural similarities to UvrC and intron-encoded endonucleases that is required for efficient budded virus production. *J. Virol.* **86**, 5614-5625.

Wu X, and Guarino LA (2003): Autographa californica nucleopolyhedrovirus orf69 encodes an RNA cap (nucleoside-2'-O)-methyltransferase. *J. Virol.* **77**, 3430-3440.

Wu X, Stewart S, and Theilmann DA (1993): Alternative transcriptional initiation as a novel mechanism for regulating expression of a baculovirus trans activator. *J. Virol.* **67**, 5833-5842.

Wu Y, and Carstens EB (1998): A baculovirus single-stranded DNA binding protein, LEF-3, mediates the nuclear localization of the putative helicase P143. *Virology* **247**, 32-40.

Xi Q, Wang J, Deng R, and Wang X (2007): Characterization of AcMNPV with a deletion of me53 gene. *Virus Genes* **34**, 223-232.

Xiang X, Chen L, Guo A, Yu S, Yang R, and Wu X (2011a): The Bombyx mori nucleopolyhedrovirus (BmNPV) ODV-E56 envelope protein is also a per os infectivity factor. *Virus Res.* **155**, 69-75.

Xiang X, Chen L, Hu X, Yu S, Yang R, and Wu X (2011b): Autographa californica multiple nucleopolyhedrovirus odv-e66 is an essential gene required for oral infectivity. *Virus Res.* **158**, 72-78.

Xiang X, Shen Y, Yang R, Chen L, Hu X, and Wu X (2013): Bombyx mori nucleopolyhedrovirus BmP95 plays an essential role in budded virus production and nucleocapsid assembly. *J. Gen. Virol.* **94**, 1669-1679.

Xu HJ, Yang ZN, Zhao JF, Tian CH, Ge JQ, Tang XD, Bao YY, and Zhang CX (2008): Bombyx mori nucleopolyhedrovirus ORF56 encodes an occlusion-derived virus protein and is not essential for budded virus production. *J. Gen. Virol.* **89**, 1212-1219.

Xu W, Fan Y, Wang H, Feng M, and Wu X (2019): Bombyx mori nucleopolyhedrovirus F-like protein Bm14 affects the morphogenesis and production of occlusion bodies and the embedding of ODVs. *Virology* **526**, 61-71.

Xu W, Kong X, Liu H, Wang H, and Wu X (2020a): Bombyx mori nucleopolyhedrovirus F-like protein Bm14 is a type I integral membrane protein that facilitates ODV attachment to the midgut epithelial cells. *J. Gen. Virol.* **101**, 309-321.

Xu W, Wang H, Liu H, and Wu X (2020b): Bombyx mori nucleopolyhedrovirus F-like protein Bm14 is a cofactor for GP64-Mediated efficient infection via forming a complex on the envelope of budded virus. *Virology* **539**, 61-68.

Xu X, Zhou X, Nan H, Zhao Y, Bai Y, Ou Y, and Chen H (2016): Aggregation of AcMNPV LEF-10 and Its Impact on Viral Late Gene Expression. *Plos One* **11**, e0154835.

Yamagishi J, Burnett ED, Harwood SH, and Blissard GW (2007): The AcMNPV pp31 gene is not essential for productive AcMNPV replication or late gene transcription but appears to increase levels of most viral transcripts. *Virology* **365**, 34-47.

Yan H, Shobahah J, Wei M, Obeng E, Xue S, Hu D, Quan Y, and Yu W (2019): Phosphorylation of nucleopolyhedrovirus 39K is essential for the regulation of viral gene transcription in silkworm cells. *Acta. Virol.* **63**, 469-474.

Yang M, Huang C, Qian DD, and Li LL (2014a): Functional characterization of Autographa californica multiple nucleopolyhedrovirus gp16 (ac130). *Virology* **464-465**, 341-352.

Yang M, Wang S, Yue XL, and Li LL (2014b): Autographa californica multiple nucleopolyhedrovirus orf132 encodes a nucleocapsid-associated protein required for budded-virus and multiply

enveloped occlusion-derived virus production. *J. Virol.* **88**, 12586-12598.

Yang S, and Miller LK (1998): Expression and mutational analysis of the baculovirus very late factor 1 (vlf-1) gene. *Virology* **245**, 99-109.

Yang S, and Miller LK (1999): Activation of baculovirus very late promoters by interaction with very late factor 1. *J. Virol.* **73**, 3404-3409.

Yang ZN, Xu HJ, Park EY, and Zhang CX (2008): Characterization of Bombyx mori nucleopolyhedrovirus with a deletion of bm118. *Virus Res*. **135**, 220-229.

Yang ZN, Xu HJ, Thiem SM, Xu YP, Ge JQ, Tang XD, Tian CH, and Zhang CX (2009): Bombyx mori nucleopolyhedrovirus ORF9 is a gene involved in the budded virus production and infectivity. *J. Gen. Virol.* **90**, 162-169.

Yao L, Zhou W, Xu H, Zheng Y, and Qi Y (2004): The Heliothis armigera single nucleocapsid nucleopolyhedrovirus envelope protein P74 is required for infection of the host midgut. *Virus Res*. **104**, 111-21.

Yin F, Du R, Kuang W, Yang G, Wang H, Deng F, Hu Z, and Wang M (2016): Characterization of the viral fibroblast growth factor homolog of Helicoverpa armigera single nucleopolyhedrovirus. *Virol. Sin*. **31**, 240-248.

Yin F, Wang M, Tan Y, Deng F, Vlak JM, Hu Z, and Wang H (2014): Identification and functional analysis of inter-subunit disulfide bonds of the F protein of Helicoverpa armigera nucleopolyhedrovirus. *J. Gen. Virol.* **95**, 2820-2830.

Yu IL, Bray D, Lin YC, and Lung O (2009): Autographa californica multiple nucleopolyhedrovirus ORF 23 null mutant produces occlusion-derived virions with fewer nucleocapsids. *J. Gen. Virol.* **90**, 1499-1504.

Yu M, and Carstens EB (2011): Characterization of an Autographa californica multiple nucleopolyhedrovirus mutant lacking the ac39(p43) gene. *Virus Res*. **155**, 300-306.

Yu W, Du CY, Quan YP, Nie ZM, Chen J, Lv ZB, and Zhang YZ (2013): Characterization of late gene expression factor LEF-10 from Bombyx mori nucleopolyhedrovirus. *Virus Res*. **175**, 45-51.

Yuan M, Huang Z, Wei D, Hu Z, Yang K, and Pang Y (2011): Identification of Autographa californica nucleopolyhedrovirus ac93 as a core gene and its requirement for intranuclear microvesicle formation and nuclear egress of nucleocapsids. *J. Virol.* **85**, 11664-11674.

Yuan M, Wu W, Liu C, Wang Y, Hu Z, Yang K, and Pang Y (2008): A highly conserved baculovirus gene p48 (ac103) is essential for BV production and ODV envelopment. *Virology* **379**, 87-96.

Yue Q, Yu Q, Yang Q, Xu Y, Guo Y, Blissard GW, and Li Z (2018): Distinct roles of cellular ESCRT-I and ESCRT-III proteins in efficient entry and egress of budded virions of Autographa californica multiple nucleopolyhedrovirus. *J Virol* **92**, e01636-17.

Zemskov EA, Kang W, and Maeda S (2000): Evidence for nucleic acid binding ability and nucleosome association of Bombyx mori nucleopolyhedrovirus BRO proteins. *J. Virol.* **74**, 6784-6789.

Zhang B, Liang A, and Fu Y (2019): Ac34 protein of AcMNPV promoted progeny virus production and induced the apoptosis in host Sf9 cells. *Biotechnol. Lett.* **41**, 147-158.

Zhang C, Zhu ZN, Yuan J, Shi YH, Chen J, Nie ZM, Lv ZB, Zhang YZ, and Yu W (2014): Effects of bm47 deletion on viral replication and transcription of Bombyx mori nucleopolyhedrovirus. *Bing Du Xue Bao* **30**, 285-291.

Zhang JH, Ohkawa T, Washburn JO, and Volkman LE (2005): Effects of Ac150 on virulence and

pathogenesis of Autographa californica multiple nucleopolyhedrovirus in noctuid hosts. *J. Gen. Virol.* **86**, 1619-1627.

Zhang MJ, Cheng RL, Lou YH, Ye WL, Zhang T, Fan XY, Fan HW, and Zhang CX (2012a): Disruption of Bombyx mori nucleopolyhedrovirus ORF71 (Bm71) results in inefficient budded virus production and decreased virulence in host larvae. *Virus Genes* **45**, 161-168.

Zhang MJ, Tian CH, Fan XY, Lou YH, Cheng RL, and Zhang CX (2012b): Bombyx mori nucleopolyhedrovirus ORF54, a viral desmoplakin gene, is associated with the infectivity of budded virions. *Arch. Virol*. **157**, 1241-1251

Zhang SX, Han Y, and Blissard GW (2003): Palmitoylation of the Autographa californica multicapsid nucleopolyhedrovirus envelope glycoprotein GP64: mapping, functional studies, and lipid rafts. *J. Virol.* **77**, 6265-6273.

Zhang X, Xu K, Wei D, Wu W, Yang K, and Yuan M (2017): Baculovirus infection induces disruption of the nuclear lamina. *Sci. Rep*. **7**, 7823.

Zhang Y, Hu X, Mu J, Hu Y, Zhou Y, Zhao H, Wu C, Pei R, Chen J, Chen X, and Wang Y (2018): Ac102 Participates in Nuclear Actin Polymerization by Modulating BV/ODV-C42 Ubiquitination during Autographa californica Multiple Nucleopolyhedrovirus Infection. *J. Virol.* **92**, e00005-18.

Zhang Y, Shi Y, Yu H, Li J, Quan Y, Shu T, Nie Z, Zhang Y, and Yu W (2016): Functional characterization of Bombyx mori nucleopolyhedrovirus mutant lacking late expression factor 9. *Acta. Virol.* **60**, 281-289.

Zhao C, Zhang C, Chen B, Shi YH, Quan YP, Nie ZM, Zhang YZ, and Yu W (2016): A DNA Binding Protein Is Required for Viral Replication and Transcription in Bombyx mori Nucleopolyhedrovirus. *Plos One* **11**, e0159149.

Zheng F, Huang Y, Long G, Sun X, and Wang H (2011): Helicoverpa armigera single nucleocapsid nucleopolyhedrovirus ORF51 is a ChaB homologous gene involved in budded virus production and DNA replication. *Virus Res*. **155**, 203-212.

Zhou F, Kuang W, Wang X, Hou D, Huang H, Sun X, Deng F, Wang H, van Oers MM, Wang M, and Hu Z (2019): The cysteine-rich region of a baculovirus VP91 protein contributes to the morphogenesis of occlusion bodies. *Virology* **535**, 144-153.

Zhou J, and Blissard GW (2008): Identification of a GP64 subdomain involved in receptor binding by budded virions of the baculovirus Autographica californica multicapsid nucleopolyhedrovirus. *J. Virol.* **82**, 4449-4460.

Zhu S, Wang W, Wang Y, Yuan M, and Yang K (2013): The baculovirus core gene ac83 is required for nucleocapsid assembly and per os infectivity of Autographa californica nucleopolyhedrovirus. *J. Virol.* **87**, 10573-10586.

Zoog SJ, Bertin J, and Friesen PD (1999): Caspase inhibition by baculovirus P35 requires interaction between the reactive site loop and the beta-sheet core. *J. Biol. Chem*. **274**, 25995-26002.