Electronic Supplementary Material

Genome sequencing and analysis of a granulovirus isolated from the Asiatic rice leafroller, *Cnaphalocrocis medinalis*

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Table S1. Analysis and homology search of CnmeGV ORFs

CnmeGV						Homologous ORFs in GVs (ORF number/amino acid identity based on Blastp results %)													
orf	start		end	aa	name	Ador	Agse	CaL	Choc	Clan	Cp	Crle	Epap	Hear	Phop	Pira	Plxy	Psun	Splt	Xecn
1	1	>	750	249	*granulin*	1/83	1/80	1/83	1/83	1/83	1/84	1/84	1/84	1/80	1/82	1/76	4/79	1/79	1/79	1/80
2	747	<	1220	157	*p78/83*	2/33	2/52	2/39	2/43	2/41	2/41	2/35	5/33		2/29	2/51			2/29	
3	1207	>	2016	269	*pk-1*	3/52	3/46	3/50	3/55	3/52	3/48	3/55	6/42	3/45	3/52	3/58	6/46	3/46	3/43	3/43
4	2452	<	3081	209		4/26	6/28	4/31	5/35	4/33	4/35	4/36	4/26	6/27	4/33	4/34	8/20	6/26	5/29	7/27
5	3071	>	3346	91		5/38	7/31	5/43	6/42	5/48	5/42	5/40			5/32	5/43	9/30		6/39	
6	3326	<	4720	464	*ie-1*	6/43	8/32	6/39	7/43	6/38	7/40	6/37	35/32	8/31	6/36	6/46	10/29	8/30	7/28	9/31
7	4654	>	5238	194	*ep23*	7/41	9/42	7/48	8/44	7/47	8/42	7/49	34/41	9/31	7/38	7/54	11/32	9/33	8/31	10/31
8	5339	<	5662	107	*chtB1*	8/47	10/40	8/50	9/51	8/50	9/55	8/55	33/47	10/42	8/49	8/52	12/53	10/42	9/46	11/42
9	5820	<	7844	674	*U*															
10	8455	>	8739	94	*U*															
11	8980	<	9261	93	*odv-e18*	10/74	11/52	13/74	12/86	13/73	14/77	13/78	29/73	11/58	12/76	14/81	13/69	11/57	10/63	12/60
12	9262	<	10650	462	*p49*	11/49	12/46	14/51	13/56	14/51	15/57	14/57	28/43	12/40	13/38	15/60	14/41	12/39	11/41	13/40
13	10678	>	11775	365	*pif-5*	12/66	15/57	15/71	14/74	15/67	18/70	17/69	27/68	14/51	16/68	16/67	16/64	14/53	13/53	15/50
14	11776	>	11994	72								19/40								
15	11989	<	12624	211	*pep-1*	16/44	18/48	19/53	17/59	19/54	20/50	20/55	25/51	16/50	19/52	20/51	20/66	16/51	15/46	17/50
16	12614	>	13186	190					9/38				33/32	10/32	8/36			10/31		11/31
17	13278	>	14228	316	*pep/p10*	17/53	19/49	36/52	18/57	35/53	22/51	23/55	22/52	18/59	20/56	21/56	21/47	18/60	19/40	19/59
18	14264	>	14728	154	*pep-2*	18/40	20/47	37/54	19/49	36/53	23/48	24/49	21/42	17/46	21/50	22/48	23/46	17/46	18/42	18/47
19	15143	<	15415	90	*U*															
20	15606	>	16982	458		21/29		40/25		38/25	29/30					24/24				
21	16985	>	17392	135	*lef-2*	32/27	35/27	30/40	29/33	29/28	41/45	38/31		33/36	37/46	33/53		33/39	32/26	35/27
22	17525	>	17767	80		33/42	36/41	29/45	30/46	28/49	42/40	39/40			38/37	34/45		34/38	33/38	36/37
	18102	>	18575		*non-hr like*															
23	18523	<	18693	56	*U*															
24	19000	>	19422	140	*U*															

To be continued

CnmeGV					Homologous ORFs in GVs (ORF number/amino acid identity based on Blastp results %)													
orf	start	end	aa	name	Ador	Agse	CaL	Choc	Clan	Cp	Crle	Epap	Hear	Phop	Pira	Plxy	Psun	Splt	Xecn
25	19491 >	20090	199		56/48	57/50		48/51						59/56	54/54				
26	20174 >	20809	211	*p22.2*										64/26	52/33				
27	21892 >	23865	657	*p74*	53/52	56/48	52/52	46/58	49/54	60/58	58/58	59/51	72/41	55/57	51/56	49/51	77/43		77/43
28	24446 >	24946	166	*sod*	51/59	54/59	51/60	44/66	48/61	59/66	57/62	58/60	63/59	54/62	50/71		64/61		68/54
29	24972 >	25295	107	*lef-11*	50/52	52/54	50/59	43/64	47/64	58/60	56/60	57/42	51/51	53/58	49/61	46/48	54/57	49/49	56/54
30	25258 >	26397	379	*39k*	49/31	51/26		42/28	46/28	57/45	55/24	56/32		52/31	48/36				
31	26431 <	26604	57		47/47	49/47	47/33	41/51	45/33	56/62	54/54		49/38	51/40	47/62				54/38
32	26627 <	27700	357	*odv-ec43*	46/54	48/57	46/55	40/60	44/54	55/52	53/57	53/53	48/41	50/46	46/66	43/48	51/41	46/48	53/41
33	27790 >	28074	94	*ubiquitin*	45/76	47/73	45/80	39/83	43/80	54/80	52/84	52/83	47/83	49/76	45/84	42/77	50/83	45/80	52/83
34	28130 <	28276	49		44/45		20/56	38/68	20/56	53/61	51/51		46/53	48/55		41/50	48/47	43/55	51/53
35	28291 >	28980	229		43/74	46/69	21/60	37/84	21/59	52/81	50/70	50/69	45/67	47/74	43/83	40/53	47/65	42/64	50/67
36	28990 <	31503	837		42/33	45/30	22/28		22/27	50/38	47/48			46/38	42/30			41/26	
37	31531 >	31731	66		41/42	44/33				49/40	46/45			45/45	41/41		44/40		46/38
38	31798 <	32268	156		36/33	40/31	27/28	32/32	26/30						36/33				
39	32253 <	33578	441	*mp-nase*	37/32	41/34	26/39	33/40	25/37	46/38	43/41	44/34	38/29	41/35	37/43	35/28	38/30	37/30	40/29
40	33644 <	34045	133		29/58	34/40	41/52	28/54	39/53	39/56	36/58	40/55		34/58	31/53	31/43	32/42	31/37	34/42
41	34012 >	36279	755	*odv-e66*	28/60	33/37		27/66		37/68	35/62	39/52	150/40	33/67	44/54	30/52	156/41		149/41
42	36280 <	36864	194	*pif-3*	26/38	29/36	34/46	26/42	33/45	35/45	34/47	38/42	30/43	31/42	30/47	29/41	30/46	27/46	32/44
43	36924 >	37577	217		25/24	27/29	33/21	24/29	32/24	33/24	32/24	37/26	28/32	29/29	28/30	28/28	28/27	26/27	
44	37669 <	38604	311												27/37				
45	38798 <	40582	594	*efp*	23/41	25/48	31/44	23/53	30/45	31/52	30/53	14/42	26/31	27/49	26/55	26/41	26/32	24/38	27/32
46	40704 <	41780	358	*U*															
47	41925 <	43061	378	*U*															
48	43398 >	44297	299	*pif-2*	39/64	43/50	24/67	35/69	23/67	48/70	45/67	47/61	42/55	44/66	40/68	37/57	43/54	39/57	45/54
49	44662 <	45363	233			59/48		49/60		62/56	60/51								
50	45371 >	46594	407	*p47*	58/58	60/54	58/57	50/60	55/57	68/60	61/60	63/56	74/53	61/57	56/63	51/53	79/54	58/53	78/52
51	46629 >	47339	236	*BV-e31*	59/63	61/60	59/58	51/63	56/58	69/67	62/67	65/57	77/56	62/64	57/69	52/66	82/56	59/57	79/57
52	47357 >	47809	150	*p24*	60/48	62/47	60/47	52/56	57/47	71/52	63/53	66/47	78/40	63/48	58/51	53/47	83/39	60/48	80/40

To be continued

CnmeGV					Homologous ORFs in GVs (ORF number/amino acid identity based on Blastp results %)													
orf	start		end	aa	name	Ador	Agse	CaL	Choc	Clan	Cp	Crle	Epap	Hear	Phop	Pira	Plxy	Psun	Splt	Xecn
53	47873	<	48184	103	*38.7k*		63/36		54/33			65/33	67/33		65/34	59/41	54/43			
54	48165	<	48953	262	*lef-1*	62/51	64/48	63/59	55/59	60/58	74/56	66/59	68/53	80/45	66/51	60/56	55/47	85/47	62/48	82/45
55	48865	>	50529	554	*pif-1*	63/46	65/37	64/47	56/50	61/46	75/50	67/50	69/44	82/41	67/45	61/51	7/42	87/40	64/41	84/40
56	50540	<	51262	240	*fgf-1*	64/39	66/31	65/41	57/43	62/42	76/39	68/39	70/32	83/29	69/46	62/45	56/42	88/31	66/32	85/30
57	51944	<	53362	472	*bro-A*									54/67				137/70	111/74	60/71
58	53820	<	54143	107	*U*															
59	54398	>	54784	128		65/42	67/37	67/39	59/36	64/42	79/35	70/36	73/32	85/31	71/37	64/44	59/65	90/29	68/47	87/31
60	54803	<	55120	105	*lef-6*	67/42	68/31	68/29	60/38	65/28	80/39	71/40	74/33	86/30	72/35	65/43	60/32	91/32	69/39	88/34
61	55162	<	56094	310	*dbp*	68/29	69/26	69/30	61/31	66/29	81/33	72/29	75/25		73/31	66/27	61/27		70/29	
62	56108	<	56377	89					62/38		82/36	73/40								
63	56371	>	56559	62	*dnapol*															
64	56636	<	56962	108				70/37	63/31	67/38	82/38	73/34	77/35			67/45				
65	57010	>	58194	394	*p45/p48*	69/66	72/61	71/64	64/71	68/64	83/72	74/72	78/57	90/55	75/67	68/73	63/51	95/55	73/52	91/55
66	58221	>	58595	124	*P12*	70/57	73/48	72/59	65/53	69/56	84/55	75/54	79/43	91/44	76/32	69/60	64/38	96/44	74/42	92/44
67	58632	>	59789	385	*p40/c42*	71/56	74/51	73/58	66/58	70/58	85/58	76/59	80/49	92/46	77/49	70/60	66/44	97/46	75/45	93/46
68	59805	>	59978	57	*p6.9*[a]	72/	75/86	74/63	67/	71/63	86/60	77/	81/46	93/71	78/	71/56	67/57	98/86		94/71
69	60065	<	60838	257	*lef-5*	73/55	76/51	75/61	68/61	72/61	87/59	78/59	82/51	94/51	79/59	72/65	69/52	99/48	76/50	95/51
70	60791	>	61777	328	*38k*	74/56	77/49	76/62	69/58	73/62	88/58	79/56	83/49	95/47	80/57	73/63	70/46	100/49	77/50	96/46
71	61737	<	62075	112	*pif-4*	75/50	78/50	77/49	70/54	74/51	89/51	80/54	84/45	96/44	81/41	74/56	71/42	101/45	79/48	97/44
72	62210	>	65695	1161	*helicase*	76/38	79/32	78/38	71/40	75/38	90/37	81/36	85/30	97/31	82/32	75/41	72/32	102/31	80/31	98/31
73	65828	<	66475	215	*odv-e25*	77/63	81/56	79/56	72/64	76/56	91/66	82/67	86/60	98/56	83/60	76/65	74/60	103/55	81/57	99/56
74	66599	<	67078	159	*p18*	78/39	82/45	80/50	73/55	77/50	92/55	83/49	87/50	99/46	84/49	77/63	75/43	104/46	82/39	100/48
75	67148	>	67939	263	*p33*	79/53	83/53	81/55	74/58	78/54	93/57	84/56	88/57	100/52	85/55	78/66	76/55	105/52	83/51	101/51
76	68076	<	69524	482	*lef-4*	80/48	85/45	83/46	75/53	80/46	95/47	86/46	91/47	112/41	87/50	80/54	78/42	114/41	86/44	110/42
77	69615	>	70508	297	*vp39*	81/61	86/33	84/60	76/58	81/59	96/52	87/53	92/39	113/36	88/48	81/65	79/33	115/36	87/36	111/35
78	70586	>	71488	300	*odv-e27*	82/51	87/41	85/57	77/55	82/58	97/55	88/53	93/41	114/40	89/42	82/60	80/36	116/41	88/43	112/41
79	71520	>	71729	69	*U*															

To be continued

CnmeGV						Homologous ORFs in GVs (ORF number/amino acid identity based on Blastp results %)													
orf	start		end	aa	name	Ador	Agse	CaL	Choc	Clan	Cp	Crle	Epap	Hear	Phop	Pira	Plxy	Psun	Splt	Xecn
80	72155	<	72967	270		83/30	88/24	86/29	78/35	83/29	99/27	90/30	94/24	116/27	92/27	83/28	82/31	117/26	89/26	113/27
81	73024	>	73302	92	*U*															
82	73324	<	75132	602	*vp91*	85/40	91/32	88/40	80/35	86/39	101/40	92/41	96/34	121/39	94/42	85/40	84/35	122/36	92/33	118/40
83	75104	>	75601	165	*tlp20*											86/30				
84	75618	<	76010	130	*U*															
85	76616	>	78076	486	*bro-B*									101/66				167/59		109/65
86	78318	>	78800	160	*bro-C*									110/48				111/44		108/46
87	79019	>	79636	205		87/64	94/55	90/64	82/71	88/69	103/73	94/72	98/67	123/57	96/69	87/70	86/64	124/57	94/57	120/57
88	79596	>	80468	290	*gp41*	88/46	95/55	91/57	83/61	89/59	104/66	95/63	99/59	124/47	97/58	88/63	87/44	125/48	95/53	121/48
89	80491	>	80805	104		90/41			85/40	90/35	105/39	96/46			98/40	89/42				
90	80771	>	81895	374	*vlf-1*	91/67	97/61	93/67	86/67	91/67	106/71	97/69	101/48	126/53	99/68	90/76	89/49	127/51	97/55	123/53
91	81912	>	82166	84		92/68	99/58	94/37	88/76	92/70	107/70	98/70	102/62	128/56	100/64	91/81	91/56	129/56	99/58	125/54
92	82800	>	83660	286		109/31	117/27	111/29	106/34	110/29	130/35	118/39	121/26			109/30	108/29		119/30	
93	83938	>	84510	190	*rr1*						127/26				119/32					
94	84571	<	85893	440	*alk-exo*	107/38	115/38	110/40	104/40	109/40	125/39	115/38	119-120/40	146/38	114/39	107/41	106/36	152/39	117/33	145/38
95	85955	<	86251	98		106/40		109/49	103/62	108/48	124/55	114/54			115/53	106/45				
96	86359	>	87711	450	*fgf-2*	105/26	113/31	108/31	102/43	107/32	123/34	113/38	118/32	145/25	116/40	105/36	104/29	151/25	116/28	144/27
97	88307	<	88672	121	*U*															
98	88812	>	90563	583	*ligase*	103/49	110/50	105/48	99/55	104/49	120/54	110/56	115/46	142/43	112/50	102/61	101/42	148/43	110/44	141/43
99	90706	<	91161	151	*fp 25k*	101/50	108/56	103/57	97/57	102/56	118/56	108/58	113/49	141/51	110/53	100/55	100/48	146/44	109/51	140/51
100	91234	<	92727	497	*lef-9*	100/68	107/65	102/64	96/69	101/66	117/68	107/71	112/69	140/62	109/73	99/72	99/64	145/62	107/65	139/61
101	93356	<	94207	283	*iap-5*	99/49	106/43	101/54	95/54	100/53	116/53	106/53	111/44	139/34	108/54	98/58	98/36	143/33	106/38	137/34
102	94261	<	94767	168		98/31	105/25	101/33	94/32	100/34	115/26	105/24	110/28		107/30	97/31			105/47	
103	94773	<	95159	128	*pif-6*	97/59	104/54	100/56	93/65	98/56	114/60	104/60	109/48	137/45	106/51	96/57	96/51	141/48	104/48	135/45
104	95125	>	96204	359	*lef-3*	96/25		99/23	92/24	97/25	113/27		108/23			95/24				
105	96201	<	96500	99										69/43				74/42		75/43
106	96596	<	98482	628	*desmoplakin*	95/28	102/26	98/23		96/26	112/30	102/26	107/32		104/27	94/31				

To be continued

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orf	start	end	aa	name	Ador	Agse	CaL	Choc	Clan	Cp	Crle	Epap	Hear	Phop	Pira	Plxy	Psun	Splt	Xecn
107	98481 >	101741	1086	*polymerase*	94/48	101/46	97/48	90/48	95/47	111/49	101/47	106/45	134/44	103/47	93/49	93/40	138/43	101/41	132/44
108	101738 <	102205	155		93/56	100/48	96/47	89/57	94/48	108/53	99/52	103/46	129/28	101/55	92/52	92/41	130/28	100/40	126/28
109	102606 <	105233	875	*lef-8*	110/66	118/62	112/61	107/67	111/62	131/67	119/67	122/63	149/61	121/67	110/68	109/61	155/61	121/60	148/61
110	105394 >	105786	130				113/26		113/26						111/28				
111	105857 <	106063	68					108/35	114/32	133/40			168/31		112/50		172/30		170/29
112	106065 >	106466	133		111/56	122/51	115/54	109/59	115/55	134/60	121/62	125/52	169/41	122/63	113/64	112/46	173/40	127/39	171/41
113	106450 <	107439	329		113/40	124/38	116/31	110/30	116/30	135/30	122/33	126/37	170/33	123/37	114/32		174/28	128/37	172/33
114	107466 <	107660	64		114/48		117/42	111/44	117/45	136/35	123/35				115/55				
115	107738 >	108745	335	*vp1054*	115/50	127/46	119/54	113/54	119/55	138/52	125/54	129/44	173/41	126/48	116/56	115/39	177/43	130/41	175/42
116	108764 >	108988	74	*U*															
117	108999 >	110159	386	*fgf-3*	117/36	128/38	121/40	114/35	121/35	140/38	127/40	131/30		128/32	118/42	117/27		133/28	
118	110278 >	111231	317	*me-53*	119/46	131/39	123/47	116/51	123/48	143/50	129/51	133/32	178/33	130/46	120/55	120/40	182/32	134/34	180/32

Note: The viruses used in this table are *Adoxophyes orana granulovirus* (AdorGV), *Agrotis segetum granulovirus* (AgseGV), *Clostera anastomosis granulovirus* (CaLGV) , *Choristoneura occidentalis granulovirus* (ChocGV), *Clostera anachoreta granulovirus* (ClanGV), *Cydia pomonella granulovirus* (CpGV), *Cryptophlebia leucotreta granulovirus* (CrleGV), *Epinotia aporema granulovirus* (EpapGV), *Helicoverpa armigera granulovirus* (HearGV), *Phthorimaea operculella granulovirus* (PhopGV), *Pieris rapae granulovirus* (PrGV), *Plutella xylostella granulovirus* (PlxyGV), *Pseudaletia unipuncta granulovirus* (PsunGV), *Spodoptera litura granulovirus* (SpltGV) and *Xestia c-nigrum granulovirus* (XecnGV).

[a]: This ORF has only low identity to several NPVs;

U: These ORFs are unique to CnmeGV genome