

C-terminal PB Column	1					2					3					4					5																														
	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*																					
<i>Gorpius annulatus</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	L	-	S	S	H	F	F	V	V	V	T	E	G	V	S	M	C	A	S	S	G	M	M			
<i>Carventus hainanensis</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	I	L	T	S	S	G	L	L	-	S	S	H	A	F	V	V	V	T	E	G	I	L	C	N	S	S	G	M	M			
<i>Aethus indicus</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	L	-	S	S	H	F	F	V	V	V	T	E	G	L	S	L	C	S	S	S	G	M	M			
<i>Nezara viridula</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	L	-	S	S	H	F	F	V	V	V	T	E	G	L	S	L	C	S	S	S	G	M	M			
<i>Megacopta cribraria</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	L	V	-	S	S	H	F	F	V	V	V	T	E	G	L	S	L	C	S	S	S	G	M	M		
<i>Poecilocoris lewisi</i>	S	S	A	T	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	L	A	-	S	S	H	F	F	V	V	V	T	E	G	L	S	L	C	S	S	S	G	M	M		
<i>Cyclopelta parva</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	L	-	S	S	H	F	F	V	V	V	T	E	G	L	S	L	C	S	S	S	G	M	M			
<i>Eurostus validus</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	M	-	S	S	H	F	F	V	V	V	T	E	G	L	S	L	C	S	S	S	G	M	M			
<i>Urochela distincta</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	L	-	S	S	H	F	F	V	V	V	T	E	G	L	S	L	C	N	S	S	S	G	M	M		
<i>Acanthosoma sp.</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	V	-	S	S	H	F	F	V	V	V	T	E	G	L	S	L	C	N	S	S	S	G	M	M		
<i>Pyrrhlopeplus posthumus</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	L	-	S	S	H	F	F	I	V	V	T	E	G	L	F	M	C	S	S	S	G	M	M			
<i>Physopelta quadriguttata</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	M	A	-	S	S	H	F	F	I	V	V	T	E	G	L	S	M	C	S	S	S	G	M	M		
<i>Aeschyntelus chinensis</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	M	-	S	S	H	F	F	I	V	V	T	E	G	L	S	M	C	S	S	S	S	G	M	M		
<i>Riptortus pedestris</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	M	-	S	S	H	F	F	I	V	V	T	E	G	L	I	M	C	S	S	S	G	M	M			
<i>Acanthocoris scaber</i>	S	S	V	I	S	T	S	S	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	M	-	S	S	H	F	F	I	V	V	T	E	G	L	S	M	C	S	S	S	S	G	M	M		
<i>Pachygrontha antennata</i>	S	S	V	I	S	T	S	T	F	F	M	F	F	S	S	N	F	S	V	L	T	S	S	G	L	M	-	S	S	H	F	F	I	V	V	T	E	G	L	I	M	C	S	S	S	S	G	M	M		
<i>Heterogaster chinensis</i>	S	S	V	I	S	T	S	T	F	F	M	F	F	S	S	N	F	S	V	L	T	S	S	G	L	I	F	-	S	S	H	F	F	I	V	V	T	E	G	L	I	M	C	S	S	S	G	M	M		
<i>Artheneis intricata</i>	S	S	V	I	S	T	S	T	F	F	M	F	F	S	S	N	F	S	V	L	T	S	S	G	L	M	A	-	S	S	H	F	F	I	V	V	T	E	G	L	S	M	C	N	S	S	S	G	M	M	
<i>Oxycarenus pallens</i>	S	S	A	T	S	T	S	T	F	F	M	F	F	S	S	N	F	S	V	L	T	S	S	G	L	L	A	G	S	S	H	F	F	I	V	V	T	E	G	I	S	M	C	S	S	S	S	G	M	M	
<i>Yemmatropis dispar</i>	S	S	V	I	S	T	S	T	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	-	-	-	S	S	H	F	F	I	V	I	T	E	G	L	S	M	C	N	S	S	S	G	M	M	
<i>Malcus auriculatus</i>	S	S	V	I	S	T	S	T	F	F	L	F	F	S	S	N	F	S	V	L	T	S	S	G	L	I	-	-	S	S	H	F	F	V	V	V	T	E	G	L	I	L	C	N	S	S	S	S	G	M	M
<i>Dieuches femoralis</i>	S	S	V	I	S	T	S	T	F	F	M	F	F	S	S	N	F	S	V	L	T	S	S	G	L	M	-	-	S	S	H	F	F	V	V	V	T	E	G	L	S	L	C	S	S	S	S	G	M	M	
<i>Lygaeus equestris</i>	S	S	V	I	S	T	S	T	F	F	M	F	F	S	S	N	F	S	V	L	T	S	S	G	L	-	-	-	S	S	H	F	F	I	V	V	T	E	G	L	A	V	C	S	S	S	S	G	M	M	
<i>Geocoris pallidipennis</i>	S	S	V	I	S	T	S	T	F	F	M	F	F	S	S	N	F	S	V	L	T	S	S	G	L	-	-	-	S	S	H	F	F	I	V	V	T	E	G	L	A	M	C	S	S	S	S	G	M	M	
<i>Cymus koreanus</i>	S	S	V	I	S	T	S	T	F	F	M	F	F	S	S	N	F	S	V	L	T	S	S	G	L	M	-	-	S	S	H	F	F	I	V	V	T	E	G	L	S	M	C	S	S	S	S	G	M	M	
<i>Dimorphopterus spinolae</i>	S	S	V	I	S	T	S	T	F	F	M	F	F	S	S	N	F	S	V	L	T	S	S	-	-	-	-	-	S	S	H	F	F	I	V	V	T	E	G	L	S	V	C	S	S	S	S	G	M	M	

Artheneidae+ Oxycarenidae

Pentatomioidea

Dinidoridae+ Tessaratomidae

N-terminal DFD Column	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	
<i>Isyndus reticulatus</i>	QH	QY	Y	L	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Orthotylus ftavosparsus</i>	QNT	Y	Y	V	-	P	Q	Y	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Anthocoris zoui</i>	Q	P	Y	N	V	-	P	Q	Y	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Gorpiis annulatus</i>	Q	A	Y	N	V	-	P	Q	Y	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Carventus hainanensis</i>	Q	Y	Y	H	H	Q	T	A	G	S	G	P	Q	Y	F	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Aethus indicus</i>	Q	Y	Y	H	G	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Nezara viridula</i>	Q	Y	Y	H	G	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Megacopta cribraria</i>	Q	Y	Y	H	G	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Poecilocoris lewisi</i>	Q	Y	Y	H	G	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Cyclopelta parva</i>	Q	Y	Y	H	G	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Eurostus validus</i>	Q	Y	Y	H	G	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Urochela distincta</i>	Q	Y	Y	H	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Acanthosoma sp.</i>	Q	Y	Y	H	G	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Pyrrhopleus posthumus</i>	-	Y	Y	H	T	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Physopelta quadriguttata</i>	-	Y	Y	H	T	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Aeschyntelus chinensis</i>	-	Y	Y	H	T	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Riptortus pedestris</i>	-	Y	Y	H	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Acanthocoris scaber</i>	-	Y	Y	H	T	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Pachygrontha antennata</i>	-	Y	Y	H	T	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Heterogaster chinensis</i>	-	Y	Y	H	T	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Piesma josifovi</i>	-	Y	Y	H	H	A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Artheneis intricata</i>	-	Y	Y	H	T	-	P	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Oxycarenus pallens</i>	-	Y	Y	H	T	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Metatropis dispar</i>	-	Y	Y	N	H	H	P	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Malcus auriculatus</i>	-	Y	Y	H	H	-	P	Q	G	G	H	-	Y	F	-	P	P	V	A	G	Y	G	G	Y	G	Y	Y	---
<i>Dieuches femoralis</i>	-	Y	Y	N	H	Y	P	T	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
<i>Lygaeus equestris</i>	-	Y	Y	Q	Q	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Geocoris pallidipennis</i>	-	Y	Y	Q	Q	V	H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<i>Dimorphopterus spinolae</i>	-	Y	Y	H	H	G	Y	H	Q	A	G	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Eurhichophora

Pyrrhocoroidea

Pentatomidea

Eurhichophora

N-terminal SCR Column	1		1		1		1		1		1		1		2		2		2		2	
	2	3	4	5	6	7	8	9	0	1	2	0	1	2	0	1	2	0	1	2	3	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Isyndus_reticulatus	*	*	**	**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Orthotylus_ftavosparsus																						
Anthocoris_zoui																						
Gorpis_annulatus																						
Carventus_hainanensis																						
Aethus_indicus																						
Nezara_viridula																						
Megacopta_cribraria																						
Poecilocoris_lewisi																						
Cyclopelta_parva																						
Eurostus_validus																						
Urochela_distincta																						
Acanthosoma_crassicauda																						
Pyrrhopleus_posthumus																						
Physopelta_quadriguttata																						
Aeschyntelus_chinensis																						
Riptortus_pedestris																						
Acanthocoris_scaber																						
Pachygrontha_antennata																						
Heterogaster_chinensis																						
Piesma_josifovi																						
Artheneis_intricata																						
Oxycarenus_pallens																						
Metatropis_dispar																						
Malcus_auriculatus																						
Dieuches_femoralis																						
Lygaeus_equestris																						
Oncopeltus_fasciatus																						
Geocoris_pallidipennis																						
Cymus_koreanus																						
Dimorphopterus_spinolae																						

Pentatomomorpha

Pentatomomorpha

Pentatomomorpha

Pentatomomorpha

Pentatomomorpha

Pyrrhocoroidea + Coreoidea

Pyrrhocoroidea

N-terminal ABD-A Column	4			5			6			7			8			9			0		1			2		3		
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Isyndus_reticulatus	***	****				****	*			*			*			*				*		***	**				*	****
Orthotylus_ftavosparsus	SSSS	PPPS	-LVSSASRMY	PYVAAHHHHGQQ	AAAAGLAA-FA-	TASPATMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GN-VPT	PDSMVNYS	LHHQ																	
Anthocoris_zoui	SSSS	PPPS	-LVSSASRMY	PYVAAHHHHGQQ	--AGLAA-FA-	GATPGGMGAFSS	PSSAFAA-VVD	DAATGGDKSCRYT	-GN-VPT	ADSMVNY	LHHQ																	
Gorpis_annulatus	SSSS	PPPS	-LVSSASRMY	PYVA-HHHHGQQ	-TAGLAA-FA-	GATPGSMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GN-VPT	ADSMVNY	LHH																	
Carventus_hainanensis	SSSS	PPPS	-LVSSASRMY	PYVPHHHHQQQN	--SLVAIFA-	GASGTMGAFTS	PSSALAA-VVD	DAATGGDKSCRYT	AGTTA---	DSM--Y	LHHQ																	
Aethus_indicus	SSSS	PPPS	-LVSSASRMY	PYVAAHHHQHQ	--GL---FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GS---	TDSM--Y	LHHQ																	
Nezara_viridula	SSSS	PPPS	-LVSSASRMY	PYVAAHHHQHQ	--GL---FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GS---	TDSM--Y	LHHQ																	
Megacopta_cribraria	SSSS	PPPS	-LVSSASRMY	PYVAAH-HHQHQ	--GL---FA-	GAAAT---	GAFSSPSSAALAA	VVDAAAT--	DKSCRYTTGS	-A--	DSM--Y	LHHQ																
Poecilocoris_lewisi	SSSS	PPPS	-LVSSASRMY	PYVA-HHHHQHQ	--GL---FA-	GAA-G--GAFSS	PSSALAA-VVD	DAATGDKSCRYT	-GT---	TDSM--Y	LHHQ																	
Cyclopelta_parva	SSSS	PPPS	-LVSSASRMY	PYVAAHHHQHQ	--GL---FA-	GAAATGTMGAFSS	LSSALAA-VVD	DAATGGDKSCRYT	-GS---	TDSM--Y	LHHQ																	
Eurostus_validus	SSSS	PPPS	-LVSSASRMY	PYVAAHHHQHQ	--GL---FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GS---	TDSM--Y	LHHQ																	
Urochela_distincta	SSSS	PPPS	-LVSSASRMY	PYVAAHHHQHQ	--GL---FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GG---	TDSM--Y	LHHQ																	
Acanthosoma_crassicauda	SSSS	PPPS	-LVPAASRMY	PYVA-H-HHQHQ	--GL---FA-	GAAAT---	GAFSSPSSALAA	VVDAAAT-GDKSCRYT	-GT-A--	DGM--Y	LHHQ																	
Pyrrhopeplus_posthumus	SSSS	PPPS	-LVSSASRMY	PYVAAHHHHQHQ	--GLAA-FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GSTA--	ADSM--Y	LHHQ																	
Physopelta_quadriguttata	SSSS	PPPS	-LVSSASRMY	PYVAAHHHHQHQ	--GLAA-FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GSTA--	AVSM--Y	LHHQ																	
Aeschyntelus_chinensis	SSSS	PPPS	-LVSSASRMY	PYVAAHHHHQHQ	--GLAA-FT-	GAAAGGAMGASS	PSTALAA-VVD	AAAAGDKSCRYT	-GS-A-T-	DSM--Y	LHHQ																	
Riptortus_pedestris	SSSS	PPPS	-LVSSASRMY	PYVS-HHHHQHQ	--GLAA-FAA	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GS-A-AAD	SM--Y	LHHQ																	
Acanthocoris_scaber	SSSS	PPPS	-LVSSASRMY	PYATPHHHHQHQ	--GLAA-FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GSTA--	ADSM--Y	LHHQ																	
Pachygrontha_antennata	SSSS	PPPS	-LVSSASRMY	PYVAAHHHHQHQ	--GLAA-FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATAGDKSCRYT	-GS-A-AAD	SM--Y	LHHQ																	
Heterogaster_chinensis	SSSS	PPPS	-LVSSASRMY	PYVAAHHHHQHQ	--GLAA-FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GSTA--	ADSM--Y	LHHQ																	
Piesma_josifovi	SSSS	PPPS	SLVSSASRMY	PYV-HHQHHGQ	--GLAA-FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GTT---	PDSM--Y	LHHQ																	
Artheneis_intricata	SSSS	PPPS	-LVSSASRMY	PYV-HHQHHGQ	--GLAA-FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GSTAA--	DSM--Y	LHHQ																	
Oxycarenus_pallens	SSSS	PPPS	-LVSSASRMY	PYV-HHQHHGQ	--GLAA-FA-	GATSGGMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GSSA--	ADSM--Y	LHHQ																	
Metatropis_dispar	SSSS	PPPS	-LVSSASRMY	PYVA-H-HHQHQ	--GLAA-FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GST--T-	DSM--Y	LHHQ																	
Malcus_auriculatus	SSSS	PPPS	-LVSSASRMY	PYVAAHHHHQHQ	--GLAA-FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GS-AAT-	DSM--Y	LHHQ																	
Dieuches_femoralis	SSSS	PPPS	-LVSSASRMY	PYVAAHQ-QHQ	--GL---FA-	GAAATGGMGAFSS	PGSALAA-VVD	DAATGDKSCRYT	-GS-AGT-	DSM--Y	LHHQ																	
Lygaeus_equestris	SSSS	PPPS	-LVSSASRMY	PYVAAHHHHQHQ	--GL---FA-	GAA-----	GGFGSPGSALAA	VVDAAA--	DKSCRYT	-GS-AAT-	DPV--Y	LHHQ																
Oncopeltus_fasciatus	SSSS	PPPS	-LVSSASRMY	PYVAAHHHHQHQ	--GL---FA-	GAA-----	GGFGSPGSALAA	VVDAAA--	DKSCRYT	-GS-ATT-	DPV--Y	LHHQ																
Geocoris_pallidipennis	SSSG	PPPS	-LVSSASRMY	PYVAAH-HHQHQ	--GLAA-FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	-GS-AAT-	DSM--Y	LHHQ																	
Cymus_koreanus	SSSS	PPPS	-LAASASRMY	PYVAAH-HHQHQ	--GL---FA-	GAAAGTMGAFSS	PGSALAA-VVD	DAATGGDKSCRYT	-AT---	SDSM--Y	LHHQ																	
Dimorphopterus_spinolae	SSSS	PPPS	-LVSSALRMY	PYVAAH-HHQHQ	--GL---FA-	GAAATGTMGAFSS	PSSALAA-VVD	DAATGGDKSCRYT	TTGT-A--	DSM--Y	LHHQ																	

(Piesmatidae+)
Artheneidae+
Oxycarenidae

Clade 2

Lygaeoidea