

Table S1. The insect genomes in InsectBase

Order	Species Name	GenBank	Source
Anoplura	<i>Pediculus humanus</i>	AAZO00000000	vectorBase
Blattodea	<i>Blattella germanica</i>	JPZV00000000	GCA_000762945.1
Coleoptera	<i>Agrilus planipennis</i>	JENH00000000	GCA_000699045.1
Coleoptera	<i>Anoplophora glabripennis</i>	AQHT00000000	GCA_000390285.1
Coleoptera	<i>Dendroctonus ponderosae</i>	APGL00000000	Ensembl release22
Coleoptera	<i>Hypothenemus hampei</i>	LBGY00000000	GCA_001012855.1
Coleoptera	<i>Leptinotarsa decemlineata</i>	AYNB00000000	GCA_000500325.1
Coleoptera	<i>Onthophagus taurus</i>	JHOM00000000	GCA_000648695.1
Coleoptera	<i>Priacma serrata</i>	AGRH00000000	GCA_000281835.1
Coleoptera	<i>Tribolium castaneum</i>	AAJJ00000000	Ensembl release22
Diplura	<i>Catajapyx aquilonaris</i>	JYFJ00000000	GCA_000934665.1
Diptera	<i>Aedes aegypti</i>	AAGE00000000	vectorBase
Diptera	<i>Anopheles albimanus</i>	APCK00000000	GCA_000349125.1
Diptera	<i>Anopheles arabiensis</i>	APCN00000000	GCA_000349185.1
Diptera	<i>Anopheles atroparvus</i>	AXCP00000000	GCA_000473505.1
Diptera	<i>Anopheles christyi</i>	APCM00000000	GCA_000349165.1
Diptera	<i>Anopheles coluzzii</i> *		vectorbase
Diptera	<i>Anopheles culicifacies</i>	AXCM00000000	GCA_000473375.1
Diptera	<i>Anopheles darlingi</i>	ADMH00000000	verctorbase
Diptera	<i>Anopheles dirus</i>	APCL00000000	GCA_000349145.1
Diptera	<i>Anopheles epiroticus</i>	APCJ00000000	GCA_000349105.1
Diptera	<i>Anopheles farauti</i>	JXXC00000000	GCA_000956265.1
Diptera	<i>Anopheles farauti No. 4</i>	JXWZ00000000	GCA_000956215.1
Diptera	<i>Anopheles funestus</i>	APCI00000000	GCA_000349085.1
Diptera	<i>Anopheles gambiae</i>	ABKQ00000000	vectorBase
Diptera	<i>Anopheles koliensis</i>	JXXB00000000	GCA_000956275.1
Diptera	<i>Anopheles maculatus</i>	AXCL00000000	GCA_000473185.1
Diptera	<i>Anopheles melas</i>	AXCO00000000	GCA_000473525.2
Diptera	<i>Anopheles merus</i>	AXCQ00000000	GCA_000473845.2
Diptera	<i>Anopheles minimus</i>	APHL00000000	GCA_000349025.1
Diptera	<i>Anopheles nili</i>	ATLZ00000000	GCA_000439205.1
Diptera	<i>Anopheles punctulatus</i>	JXXA00000000	GCA_000956255.1
Diptera	<i>Anopheles quadriannulatus</i>	APCH00000000	GCA_000349065.1
Diptera	<i>Anopheles sinensis</i>	ATLV00000000	GCA_000441895.2
Diptera	<i>Anopheles stephensi</i>	ALPR00000000	verctorbase
Diptera	<i>Bactrocera cucurbitae</i>	JRNW00000000	GCF_000806345.1
Diptera	<i>Bactrocera dorsalis</i>	JFBF00000000	GCF_000789215.1
Diptera	<i>Bactrocera tryoni</i>	JHQJ00000000	GCA_000695345.1
Diptera	<i>Belgica antarctica</i>	JPYR00000000	GCA_000775305.1
Diptera	<i>Ceratitis capitata</i>	AOHK00000000	GCF_000347755.1
Diptera	<i>Chironomus tentans</i>	CBTT00000000	GCA_000786525.1

Diptera	<i>Culex quinquefasciatus</i>	AAWU00000000	vectorBase
Diptera	<i>Drosophila albomicans</i>	ACVV00000000	GCA_000298335.1
Diptera	<i>Drosophila ananassae</i>	AAPP00000000	GCF_000005115.1
Diptera	<i>Drosophila biarmipes</i>	AFFD00000000	GCA_000233415.2
Diptera	<i>Drosophila bipectinata</i>	AFFE00000000	GCA_000236285.2
Diptera	<i>Drosophila elegans</i>	AFFF00000000	GCA_000224195.2
Diptera	<i>Drosophila erecta</i>	AAPQ00000000	GCF_000005135.1
Diptera	<i>Drosophila eugracilis</i>	AFPQ00000000	GCA_000236325.2
Diptera	<i>Drosophila ficusphila</i>	AFFG00000000	GCA_000220665.2
Diptera	<i>Drosophila grimshawi</i>	AAPT00000000	GCF_000005155.2
Diptera	<i>Drosophila kikkawai</i>	AFFH00000000	GCA_000224215.2
Diptera	<i>Drosophila melanogaster</i>	JSAE00000000	flybase
Diptera	<i>Drosophila miranda</i>	AJMI00000000	GCA_000269505.2
Diptera	<i>Drosophila mojavensis</i>	AAPU00000000	GCF_000005175.2
Diptera	<i>Drosophila persimilis</i>	AAIZ00000000	GCF_000005195.2
Diptera	<i>Drosophila pseudoobscura</i>	AADE00000000	GCF_000001765.3
Diptera	<i>Drosophila rhopaloo</i>	AFPP00000000	GCA_000236305.2
Diptera	<i>Drosophila sechellia</i>	JAQR00000000	GCF_000005215.3
Diptera	<i>Drosophila simulans</i>	JPYS00000000	GCF_000259055.1
Diptera	<i>Drosophila suzukii</i>	AWUT00000000	GCA_000472105.1
Diptera	<i>Drosophila takahashii</i>	AFFI00000000	GCA_000224235.2
Diptera	<i>Drosophila virilis</i>	AANI00000000	GCF_000005245.1
Diptera	<i>Drosophila willistoni</i>	AAQB00000000	GCF_000005925.1
Diptera	<i>Drosophila yakuba</i>	AAEU00000000	GCF_000005975.2
Diptera	<i>Glossina austeni</i>	JMRR00000000	GCA_000688735.1
Diptera	<i>Glossina brevipalpis</i>	JFJS00000000	GCA_000671755.1
Diptera	<i>Glossina fuscipes</i>	JFJR00000000	GCA_000671735.1
Diptera	<i>Glossina morsitans</i>	JXPS00000000	vectorBase
Diptera	<i>Glossina pallidipes</i>	JMRQ00000000	GCA_000688715.1
Diptera	<i>Glossina palpalis</i>	JXJN00000000	GCA_000818775.1
Diptera	<i>Lucilia cuprina</i>	JHUU00000000	GCA_000699065.1
Diptera	<i>Lutzomyia longipalpis</i>	AJWK00000000	GCA_000265325.1
Diptera	<i>Mayetiola destructor</i>	AEGA00000000	Hessian Fly Base
Diptera	<i>Megaselia scalaris</i>	CAQQ00000000	Ensembl release20
Diptera	<i>Musca domestica</i>	AQPM00000000	GCF_000371365.1
Diptera	<i>Phlebotomus papatasi</i>	AJVK00000000	GCA_000262795.1
Diptera	<i>Stomoxys calcitrans</i>	LDNW00000000	GCF_001015335.1
Ephemeroptera	<i>Ephemera danica</i>	AYNC00000000	GCA_000507165.1
Hemiptera	<i>Acyrtosiphon pisum</i>	ABLF00000000	aphidbase V2.1b
Hemiptera	<i>Cimex lectularius</i>	JHUN00000000	GCA_000648675.1
Hemiptera	<i>Dactylopius coccus</i>	JMCM00000000	GCA_000833685.1
Hemiptera	<i>Diaphorina citri</i>	AWGM00000000	GCF_000475195.1
Hemiptera	<i>Gerris buenoi</i>	JHBY00000000	GCA_001010745.1
Hemiptera	<i>Halyomorpha halys</i>	JMPT00000000	GCA_000696795.1

Hemiptera	<i>Homalodisca vitripennis</i>	JJNS00000000	GCA_000696855.1
Hemiptera	<i>Nilaparvata lugens</i>	AOSB00000000	OMIGA annotation project
Hemiptera	<i>Oncopeltus fasciatus</i>	JHQO00000000	GCA_000696205.1
Hemiptera	<i>Pachypsylla venusta</i>	AZLD00000000	GCA_000695645.1
Hemiptera	<i>Piezodorus guildinii</i>	JTEQ00000000	GCA_000786065.1
Hemiptera	<i>Rhodnius prolixus</i>	ACPB00000000	Ensembl release22
Hymenoptera	<i>Acromyrmex echinator</i>	AEVX00000000	Ant Genomes Portal
Hymenoptera	<i>Apis dorsata</i>	AUPE00000000	GCF_000469605.1
Hymenoptera	<i>Apis florea</i>	AEKZ00000000	GCF_000184785.1
Hymenoptera	<i>Apis mellifera</i>	JSUV00000000	beebase V4.5
Hymenoptera	<i>Athalia rosae</i>	AOFN00000000	GCF_000344095.1
Hymenoptera	<i>Atta cephalotes</i>	ADTU00000000	Ant Genomes Portal
Hymenoptera	<i>Bombus impatiens</i>	AEQM00000000	GCF_000188095.1
Hymenoptera	<i>Bombus terrestris</i>	AELG00000000	GCF_000214255.1
Hymenoptera	<i>Camponotus floridanus</i>	AEAB00000000	Ant Genomes Portal
Hymenoptera	<i>Cephus cinctus</i>	AMWH00000000	GCA_000341935.1
Hymenoptera	<i>Cerapachys biroi</i>	JASI00000000	GCF_000611835.1
Hymenoptera	<i>Ceratosolen solmsi</i>	ATAC00000000	GCF_000503995.1
Hymenoptera	<i>Copidosoma floridanum</i>	JBOX00000000	GCA_000648655.1
Hymenoptera	<i>Cotesia vestalis</i>	ZSA00000000	GCA_000956155.1
Hymenoptera	<i>Fopius arisanus</i>	JRKH00000000	GCF_000806365.1
Hymenoptera	<i>Harpegnathos saltator</i>	AEAC00000000	Ant Genomes Portal
Hymenoptera	<i>Linepithema humile</i>	ADOQ00000000	Ant Genomes Portal
Hymenoptera	<i>Megachile rotundata</i>	AFJA00000000	GCF_000220905.1
Hymenoptera	<i>Microplitis demolitor</i>	AZMT00000000	GCF_000572035.1
Hymenoptera	<i>Monomorium pharaonis</i>	BBSX00000000	GCA_000980195.2
Hymenoptera	<i>Nasonia giraulti</i>	ADAO00000000	GCA_000004775.1
Hymenoptera	<i>Nasonia longicornis</i>	ADAP00000000	GCA_000004795.1
Hymenoptera	<i>Nasonia vitripennis</i>	AAZX00000000	NasoniaBase v1.2
Hymenoptera	<i>Orussus abietinus</i>	AZGP00000000	GCA_000612105.1
Hymenoptera	<i>Pogonomyrmex barbatus</i>	ADIH00000000	Ant Genomes Portal
Hymenoptera	<i>Solenopsis invicta</i>	AEAQ00000000	Ant Genomes Portal
Hymenoptera	<i>Trichogramma pretiosum</i>	JARR00000000	GCA_000599845.1
Hymenoptera	<i>Vollenhovia emeryi</i>	BBUO00000000	GCF_000949405.1
Hymenoptera	<i>Wasmannia auropunctata</i>	BBSV00000000	GCF_000956235.1
Isoptera	<i>Zootermopsis nevadensis</i>	AUST00000000	GCA_000696155.1
Lepidoptera	<i>Bombyx mori</i>	BABU00000000	silkDB v2.0
Lepidoptera	<i>Chilo suppressalis</i>	ANCD00000000	ChiloDB v1.0
Lepidoptera	<i>Danaus plexippus</i>	AGBW00000000	MonachBase v2.0
Lepidoptera	<i>Heliconius melpomene</i>	CAFA00000000	Heliconius Genome project
Lepidoptera	<i>Manduca sexta</i>	AIXA00000000	Manduca Base OGS2
Lepidoptera	<i>Melitaea cinxia</i>	APLT00000000	GCA_000716385.1
Lepidoptera	<i>Papilio glaucus</i>	JWHW00000000	GCA_000931545.1
Lepidoptera	<i>Papilio polytes</i>	BBJD00000000	GCA_000836215.1

Lepidoptera	<i>Papilio xuthus</i>	BBJE00000000	GCA_000836235.1
Lepidoptera	<i>Plutella xylostella</i>	AHIO00000000	DBM-DB v1.0
Lepidoptera	<i>Spodoptera frugiperda</i>	JQCY00000000	GCA_000753635.2
Odonata	<i>Ladona fulva</i>	APVN00000000	GCA_000376725.1
Orthoptera	<i>Locusta migratoria</i>	AVCP00000000	GCA_000516895.1
Phasmatodea	<i>Timema cristinae</i> †		Nosil Lab of Evolutionary Biology
Strepsiptera	<i>Mengenilla moldrzyki</i>	AGDA00000000	GCA_000281935.1
Thysanoptera	<i>Frankliniella occidentalis</i>	JMDY00000000	GCA_000697945.1
Trichoptera	<i>Limnephilus lunatus</i>	JDSM00000000	GCA_000648945.1

* *Anopheles coluzzii* has none GenBank Accession, Bioproject PRJNA269176, genome files downloaded from VectorBase.

† *Timema cristinae* has none GenBank Accession, Bioproject PRJNA243533, the genome is published and downloaded from Nosil Lab of Evolutionary Biology.

Table S2. The insect Gene Sets

Species name	Genome size (Mb)	Scaffold N50	Contig N50	GC (%)	Gene number	Protein number
<i>Acromyrmex echinatior</i>	289	1,110,581	80,630	34	17,277	17,277
<i>Acyrtosiphon pisum</i>	525	518,546	28,199	31	36,194	36,938
<i>Aedes aegypti</i>	1,434	1,547,048	82,618	40	18,800	17,142
<i>Anopheles coluzzii</i>	219	4,437,439		45	14,702	14,702
<i>Anopheles darlingi</i>	133	115,073	115,072	48	10,947	10,456
<i>Anopheles gambiae</i>	265	3,800,922	42,558	45	15,423	14,666
<i>Anopheles sinensis</i>	215	814,231	30,137	47	19,352	19,351
<i>Anopheles stephensi</i>	219	837,296	36,511	45	13,787	13,250
<i>Apis dorsata</i>	223	732,052	8,422	42	20,601	18,144
<i>Apis florea</i>	224	2,863,240	24,704	43	19,333	17,663
<i>Apis mellifera</i>	227	997,193	504	33	15,313	15,313
<i>Athalia rosae</i>	159	1,366,867	51,418	45	20,151	19,484
<i>Atta cephalotes</i>	309	5,154,505	14,798	33	18,092	18,092
<i>Bactrocera cucurbitae</i>	363	1,399,015	17,360	40	21,640	20,753
<i>Bactrocera dorsalis</i>	402	1,206,001	4,913	41	18,231	17,744
<i>Bombus impatiens</i>	242	1,399,493	58,885	42	21,775	20,895
<i>Bombus terrestris</i>	241	12,868,932	76,043	42	21,558	20,320
<i>Bombyx mori</i>	467	3,998,729	8,860	38	14,622	14,622
<i>Camponotus floridanus</i>	228	441,932	19,487	34	17,063	17,063
<i>Cerapachys biroi</i>	206	1,350,650	34,211	46	26,315	23,802
<i>Ceratitidis capitata</i>	469	4,060,615	45,711	41	23,710	23,087
<i>Ceratosolen solmsi</i>	268	9,558,897	74,702	41	13,200	12,833
<i>Chilo suppressalis</i>	362	5,216	2,019	36	10,221	10,221

<i>Culex quinquefasciatus</i>	562	486,756	28,546	41	19,389	19,018
<i>Danaus plexippus</i>	238	715,607	50,721	32	15,129	15,129
<i>Dendroctonus ponderosae</i>	246	628,733	10,101	36	13,456	13,459
<i>Diaphorina citri</i>	492	109,898	34,407	39	21,985	20,995
<i>Drosophila ananassae</i>	225	4,599,533	95,247	45	15,588	15,070
<i>Drosophila erecta</i>	148	18,748,788	453,616	46	15,615	15,048
<i>Drosophila grimshawi</i>	196	8,399,593	91,192	43	15,415	14,986
<i>Drosophila melanogaster</i>	139	25,286,938	13,636,574	42	17,717	30,439
<i>Drosophila mojavensis</i>	188	24,764,193	121,517	44	14,990	14,595
<i>Drosophila persimilis</i>	184	1,869,541	20,311	46	17,351	16,878
<i>Drosophila pseudoobscura</i>	149	12,541,198	202,541	47	17,382	16,857
<i>Drosophila sechellia</i>	163	2,123,300	649	45	17,049	16,483
<i>Drosophila simulans</i>	135	22,036,056	451,931	46	15,912	15,427
<i>Drosophila virilis</i>	201	10,131,210	120,091	44	15,343	14,491
<i>Drosophila willistoni</i>	230	4,511,350	180,217	41	16,008	15,513
<i>Drosophila yakuba</i>	161	21,770,863	117,248	45	16,515	16,094
<i>Fopius arisanus</i>	149	978,588	51,867	43	20,056	18,906
<i>Harpegnathos saltator</i>	288	598,193	38,321	45	18,563	18,563
<i>Heliconius melpomene</i>	266	194,303	7,166	33	15,201	12,828
<i>Linepithema humile</i>	213	1,428,587	35,858	38	16,115	16,115
<i>Manduca sexta</i>	367	755,801	40,396	35	27,529	27,402
<i>Mayetiola destructor</i>	180	756,042	14,032	33	22,630	22,024
<i>Megachile rotundata</i>	264	1,699,680	64,153	42	28,682	26,024
<i>Megaselia scalaris</i>	489	5,698	932	34	11,638	11,462
<i>Microplitis demolitor</i>	243	318,766	13,540	39	18,954	18,169
<i>Musca domestica</i>	728	226,573	11,807	38	20,165	19,549

<i>Nasonia vitripennis</i>	287	708,989	18,840	42	18,940	18,821
<i>Nilaparvata lugens</i>	1,324	360,476	23,518	34	36,723	36,723
<i>Pediculus humanus</i>	108	497,057	34,097	28	11,664	10,775
<i>Plutella xylostella</i>	383	737,183	18,517	38	18,072	18,072
<i>Pogonomyrmex barbatus</i>	228	816,514	11,605	37	17,737	17,188
<i>Rhodnius prolixus</i>	683	847,874	35,751	34	15,642	15,440
<i>Solenopsis invicta</i>	343	720,579	14,677	36	16,521	16,521
<i>Tribolium castaneum</i>	222	975,455	43,511	34	16,542	16,525
<i>Vollenhovia emeryi</i>	280	1,346,088	32,417	46	27,195	26,071
<i>Wasmannia auropunctata</i>	323	1,175,369	37,912	44	26,070	24,085
<i>Zootermopsis nevadensis</i>	472	751,106	22,794	41	14,610	14,610

Table S3. 116 insect transcriptomes in InsectBase

Order	Species	Sample	SRA	TSA	Assemble	Sequences
	<i>Anthonomus grandis</i>	eggs; larvae; adults	SRR610743	GABY01	Mira 3.2.1	20,246
	<i>Carabus granulatus</i>	head, thorax of adult	SRS369485	GACW01	Newbler 2.6	55,363
		whole larvae and pupae, and head, thorax, and abdomen of adults	SRR090531 SRR090532 SRR090533 SRR090534 SRR090535	GAFI01	Newbler 2.5 run July 2010	20,966
		antenna*	SRP011990	GAFW01	Newbler	14,357
	<i>Dendroctonus frontalis</i>	midgut and fat body tissues from juvenile hormone-treated adult*	SRP011990	GAFW01	Newbler	11,002
		adults; pupae; larvae; antennae; midguts; fat bodies; head	SRR449538 SRR449539 SRR449540 SRR449542 SRR449543 SRR449544 SRR449545 SRR449546 SRR449547	GAFX01	Newbler 2.5	20,540
Coleoptera	<i>Ips typographus</i>	Adult antennae	ERR169822 ERR169829	GACR01	SeqMan Ngen 2.0.1 build 2	14,689
	<i>Onthophagus nigriventris</i>	3rd instar larval and prepupal	SRR1049522 SRR1049767 SRR1049768 SRR1049789	GAQW01	Newbler 2.8	59,302
	<i>Priacma serrata</i>	Priacma serrata	SRR596769	GACO01	Newbler 2.6	18,752
			SRR1049790 SRR1049791 SRR1049792 SRR1049793 SRR1049794 SRR1049795			
	<i>Trypoxylus dichotomus</i>	3rd instar larval and prepupal	SRR1049815 SRR1049816 SRR1049817 SRR1049818 SRR1049819 SRR1049820 SRR1049821	GAQV01	Newbler 2.8	34,455
Dermaptera	<i>Forficula auricularia</i>	adult	SRR578778	GAAX01	MIRA 4	26,314

Diptera	<i>Aedes albopictus</i>	oocytes under non-diapause-inducing (NDI) conditions*	SRR329457			Newbler	24,048	
		oocytes under diapause-inducing (DI) conditions*	SRR329456			Newbler	24,374	
	<i>Anopheles sinensis</i>	egg, larva, pupa, and adult	SRR651045			GAFE01	CLC Genomics Workbench version 6.0 (CLC Bio)	28,133
		egg, larva, pupa, and adult	SRR851144			GBEO01	Trinity trinitymaseq_r2011_10_29	38,463
	<i>Bactrocera dorsalis</i>	Pool of RNAseq read data from all stage specific samples associated	SRR818493 SRR818496	SRR818494 SRR818497	SRR818495 SRR818498	GAKP01	Trinity r2012-10-05	23,539
	<i>Bactrocera oleae</i>	Greece <i>Bactrocera oleae</i> transcribed-RNA	SRR799687	SRR799688		GAKB01	Newbler 2.6	11,836
	<i>Belgica antarctica</i>	whole body larva	SRR566981 SRR567166 SRR567170	SRR567164 SRR567167 SRR567171	SRR567165 SRR567169 SRR567289	GAAK01	Cufflinks 1.3.0; TopHat 1.4.1; MAKER 2.10; Bowtie 0.12.5	13,259
	<i>Ceratitis capitata</i>	the pupal stage and adult male stage : whole body	SRR915830 SRR915833 SRR915834 SRR915839 SRR915845 SRR915850	SRR915831 SRR915835 SRR915837 SRR915840 SRR915846 SRR915851	SRR915832 SRR915836 SRR915838 SRR915844 SRR915848 SRR915852	GAMC01	Trinity r2012-10-05	21,761

<i>Culicoides sonorensis</i>	Adult female midge transcriptome under sucrose and blood feeding	SRR1174028	SRR1174029	SRR1174030	GAWM01	Trinity AUGUST-2013	19,041
		SRR1174031	SRR1174032	SRR1174033			
		SRR1174034	SRR1174035	SRR1174036			
		SRR1174038					
<i>Drosophila ercepeae</i>	Drosophila ercepeae	SRR696764			GADP01	abyss v. 2010	15,456
<i>Drosophila malerkotliana pallens</i>	General Sample for Drosophila malerkotliana pallens	SRR544886			GADQ01	abyss v. 2009	19,161
<i>Drosophila merina</i>	General Sample for Drosophila merina	SRR544885			GADS01	abyss v. 2010	19,353
<i>Drosophila miranda</i>	transcribed-RNA	SRR364804	SRR364801	SRR364800	GALP01	Trinity r2011-10-29	12,521
		SRR364803	SRR364802	SRR364798			
		SRR364799					
<i>Drosophila pseudoananassae nigrens</i>	Drosophila pseudoananassae nigrens	SRR544889			GADR01	abyss v. 2011	29,641
<i>Drosophila pseudoananassae pseudoananassae</i>	adult: whole body	SRR544888			GAEJ01	abyss v. 2011	32,924
<i>Drosophila serrata</i>	male and female virgin adult flies	SRR796577	SRR796578		GAHN01	Cap3 21/12/2007	11,328
	whole body						
	0-1d pupa*	SRR350017					
<i>Lucilia sericata</i>	3-4d pupa*	SRR350018			Trnity	31,586	
	adult males*	SRR350021			Trnity	24,771	
	adult females*	SRR350019			Trnity	24,803	
	postfeeding third instars*	SRR350016			Trnity	12,588	

		feeding third instars*	SRR350015			Trnity	7,688
		embryos*	SRR350014			Trnity	18,128
	<i>Musca domestica</i>	all development stages whole body	SRR1045112			GBAB01 Trinity 2011	46,167
		heads*	SRP000268			Newbler	4,954
	<i>Rhagoletis pomonella</i>	bodies*	SRP000268			Newbler	4,240
		pupae*	SRP000268			Newbler	1,622
		larvae*	SRP000268			Newbler	2,255
	<i>Sitodiplosis mosellana</i>	whole body	SRR787284			GAKJ01 Trinity v. 2011	13,987
		whole body	SRR787284			GBRL01 Trinity v. 2011	10,394
			SRR1183597	SRR1183608	SRR1184092		
		Larva , Ovary ,Testis ,Male	SRR1184095	SRR1184533	SRR1184534		
		carcass,Female carcass, female	SRR1184535	SRR1184536	SRR1184537		
	<i>Teleopsis dalmanni</i>	heads, male heads,nondrive	SRR1184541	SRR1184542	SRR1184544	GBBP01 Trinity Trinity JULY-2012	194,857
		testes,drive testes	SRR1184545	SRR1184546	SRR1184553		
			SRR1184554				
	<i>Teleopsis whitei</i>	Testis	SRR1188177			GBBQ01 Trinity Trinity JULY-2012	60,498
	<i>Themira biloba</i>	embryo larva pupae	SRR1292904	SRR1292905	SRR1292906	GBGG01 Velvet June 2012	23,280
		MEAM*	SRR059302			Trnity	54,860
		MED*	SRR039231			Trnity	85,694
		ZHJ1*	SRR062575			Trnity	53,858
Hemiptera	<i>Bemisia tabaci</i>	salivary gland*	SRR316271			Trnity	12,408
		Bemisia tabaci*	SRR211281			CAP3	20,666
		MED Midgut	SRR835757			GAPP01 Trinity v. release-20120608	33,165
		MEAM1 Midgut	SRR835756			GAPQ01 Trinity v. release-20120608	27,229

<i>Euschistus heros</i>	antennae	SRR1274839	SRR1274840	GBER01	Velvet v. 1.2.0.7; Oases v. 0.2.0.8	19,520
<i>Graminella nigrifrons</i>	Female adult	SRR857271		GAQX01	Oases v0.2.08	37,537
<i>Macrosiphum euphorbiae</i>	mixed developmental stages	SRR956606	SRR965344 SRR965345	GAOM01	Velvet/Oases v. 1.0.15/0.1.18	20,254
<i>Nilaparvata lugens</i>	Nilaparvata lugens*	SRR064533			Trnity	36,748
	midgut*	SRP007536			CAP3	8,203
<i>Oncopeltus fasciatus</i>	embryos*	SRR057571			Newbler	2,598
	ovary*	SRR057570			Newbler	2,266
<i>Pachypsylla venusta</i>	3rd/4th instar	SRR961881	SRR961992 SRR961994			
	nymphs,bacteriome,whole body (minus bacteriome)	SRR961995	SRR961996 SRR961997	GAOP01	Trinity r2013-02-25	142,265
<i>Trialeurodes vaporariorum</i>	Trialeurodes vaporariorum*	SRR066677			CAP3	32,342
<i>Apis cerana</i>	Apis cerana*	SRA014784			Trnity	50,373
<i>Bombus terrestris</i>	Bombus terrestris*	ERP000936			CAP3	25,146
<i>Chyphotes mellipes</i>	Chyphotes mellipes	SRR807358		GAXL01	Trinity 2013	55,062
	Teratocyte	SRR770031		GAKG01	Trinity v. 2011-11-26 ver	30,024
<i>Cotesia vestalis</i>	Generic sample from Cotesia vestalis	SRR921586		GAUP01	SOAPdenovo-Trans 1.01	76,470
<i>Leptopilina boulardi</i>	Leptopilina boulardi	SRR559222		GAJA01	Trinity r2011-10-29	21,560
<i>Leptopilina heterotoma</i>	Leptopilina heterotoma	SRR559224		GAJC01	Trinity r2011-10-29	31,399
<i>Mischocyttarus flavitarsis</i>	Mischocyttarus flavitarsis	SRR807358		GAXM01	Trinity 2013	58,993

	<i>Osmia cornuta</i>	antennae	SRR653282 SRR653284 SRR653285 SRR653290 SRR653291 SRR653296 SRR653297 SRR653298	GAGH01	CLC Genomics Workbench 5.5	83,098
	<i>Polistes canadensis</i>	queens; workers; callows; foundresses: brain; antenna; abdomen	ERR105080	GAFR01	Roche GS assembler v2.3	45,087
	<i>Polistes metricus</i>	5th Instar Larvae female head,	SRR1217438 SRR1217593 SRR1217626 SRR1217672 SRR1217673 SRR1217684 SRR1217709 SRR1217710 SRR1217711 SRR1217712 SRR1217713 SRR1217714 SRR1217715 SRR1217716 SRR1217717 SRR1217718	GBGV01	Trinity r2012-06-08	74,517
	<i>Sceliphron caementarium</i>	Sceliphron caementarium	SRR807360	GAXN01	Trinity 2013	66,575
	<i>Sphaerophthalma orestes</i>	Sphaerophthalma orestes	SRR823431	GAXP01	Trinity 2013	50,476
	<i>Telenomus podisi</i>	adults whole body	SRR1274857 SRR1274858	GBEU01	Velvet v. 1.2.0.7; Oases v. 0.2.0.8	51,106
	<i>Chilo suppressalis</i>	midgut* Chilo suppressalis [†] larvae	SRP011415 SRR651040		Trnity Trnity SOAPdenovo v. 1.03	37,040 69,977 70,738
Lepidoptera	<i>Cnaphalocrocis medinalis</i>	Cnaphalocrocis medinalis [†]			Trnity	73,284
	<i>Galleria mellonella</i>	Galleria mellonella*	ERP000555		CAP3	40,035
	<i>Heliconius</i>	malleti wing*	SRP000859		CAP3	35,350
	<i>melpomene</i>	cythera wing*	SRP000859		CAP3	36,884

<i>Laodelphax striatellus</i>	Laodelphax striatellus*				Trnity	67,474
<i>Laphygma exigua</i>	Laphygma exigua†	SRA056289			Trnity	31,414
<i>Manduca sexta</i>	antennae*	ERP000526			Newbler	5,290
<i>Melitaea cinxia</i>	Melitaea cinxia*	SRA000207			CAP3	67,902
<i>Micropterix calthella</i>	Micropterix calthella	SRR596161			GACP01 Newbler 2.6	137,048
<i>Ostrinia furnacalis</i>	5-instar larvae of Ostrinia furnacalis (whole body)	SRR1032038	SRR1032037		GAQJ01 Trinity 2012-05-18	62,382
	two males and two females larval stage head and thorax	SRR768270			GAHP01 Newbler 2.5.3	10,741
<i>Ostrinia nubilalis</i>	Female,Adult,Bursa,Bursal Gland,Thorax	SRR1055448	SRR1055449	SRR1055450		
		SRR1055499	SRR1055517	SRR1055518		
		SRR1055519	SRR1055520	SRR1055521	GAVD01	Trinity Release 2013-02-25
		SRR1055522	SRR1055523	SRR1055524		
		SRR1055525				
<i>Ostrinia scapularis</i>	larval stage two males and two females head and thorax	SRR768810			GAHQ01 Newbler 2.5.3	11,212
<i>Pararge aegeria</i>	ovary	SRR771147	SRR772253		GAIX01 CLC bio Genomics Workbench v. 4	16,895
	Egg*	SRR179062			Trnity	87,647
	Larva*	SRR179508			Trnity	63,573
<i>Plutella xylostella</i>	Pupa*	SRR179509			Trnity	82,625
	Adult*	SRR179510			Trnity	78,362
	chlorpyrifos-resistant larva*	SRR179511			Trnity	69,120
	fipronil-resistant larva*	SRR179587			Trnity	74,699

		larvae*	SRP011066			Newbler	13,138
		Mixed sample of beet armyworm different development stages	SRR525279		GAFU01	Trinity v. r2012-10-05	18,534
	<i>Spodoptera exigua</i>	Pool spodoptera	SRR413990		GAOQ01	iAssembler v1.3.2	55,375
		Pool spodoptera	SRR413990		GAOR01	Lasergene NGen v9.1	18,027
		midgut	SRR1050532	SRR1050533 SRR1050534	GARL01	iassembler 1.3	96,463
	<i>Tryporyza incertulas</i> (walker)	Tryporyza incertulas*				Trnity	64,069
	<i>Zygaena filipendulae</i>	Zygaena filipendulae*	SRR023844			CAP3	42,735
Megaloptera	<i>Sialis lutaria</i>	Sialis lutaria	SRR596160		GABK01	Newbler 2.6	14,200
Neuroptera	<i>Chrysopa pallens</i>	adult whole body	SRR653211		GAGF01	trinity v. 20120608	50,315
	<i>Enallagma hageni</i>	embryo; larvae; adult	SRR649536		GAEQ01	Newbler v. 2.3	17,860
			SRR835455	SRR835456 SRR835457			
			SRR835466	SRR835470 SRR835475			
			SRR835479	SRR835480 SRR835481			
Odonata	<i>Gryllus firmus</i>	Female adult Fat body;Flight muscle	SRR835504	SRR835506 SRR835509			
			SRR835510	SRR835511 SRR835512	GAIZ01	Oases 0.2.08; Velvet 1.2.08	25,794
			SRR835513	SRR835514 SRR835515			
			SRR835516	SRR835517 SRR835518			
			SRR835519				
		midgut	SRR1172394	SRR1172402	GAWC01	Trinity Nov-2013	142,119
Phasmatodea	<i>Aretaon asperrimus</i>	juvenil	SRR921567		GAZQ01	SOAPdenovo-Trans 1.01	218,047
	<i>Extatosoma tiaratum</i>	midgut	SRR1172327	SRR1172340	GAWG01	Trinity NOV-2013	163,892

	<i>Medauroidea extradentata</i>	midgut	SRR1172394	SRR1172402		GAWD01	Trinity NOV-2013	130,006
	<i>Sipyloidea sipylus</i>	midgut	SRR1172444			GAWF01	Trinity NOV-2013	114,069
Plecoptera	<i>Nemurella pictetii</i>	adult	SRR578779			GAAV01	MIRA 4	18,008
Siphonaptera	<i>Archaeopsylla erinacei</i>	Archaeopsylla erinacei	SRR578730			GABB01	Newbler 2.6	35,270
			SRR1151394	SRR1153456	SRR1153458			
Thysanoptera	<i>Frankliniella occidentalis</i>	2 day old adult Female and adult Salivary glands;	SRR1153459	SRR1153460	SRR1153461	GAXD01	Velve/Oasis 1.1.05/0.1.22	31,391
			SRR1153462	SRR1153463	SRR1153464			
			SRR1153465	SRR1153466	SRR1153467			

*The data from SRA, † the data from us and assembly by ourself, then the others from TSA

Table S4. The insect miRNAs in InsectBase

Species	Precursors	Mature
<i>Acyrtosiphon pisum</i> *	123	103
<i>Aedes aegypti</i> *	101	124
<i>Agrilus planipennis</i>	90	90
<i>Anopheles gambiae</i> *	66	65
<i>Anoplophora glabripennis</i>	92	92
<i>Apis mellifera</i> *	254	259
<i>Athalia rosae</i>	98	98
<i>Blattella germanica</i>	90	90
<i>Bombyx mori</i> *	487	563
<i>Camponotus floridanus</i>	110	110
<i>Catajapyx aquilonaris</i>	76	76
<i>Cephus cinctus</i>	100	100
<i>Ceratitis capitata</i>	92	92
<i>Ceratosolen solmsi</i>	86	86
<i>Chilo suppressalis</i>	262	262
<i>Cimex lectularius</i>	81	81
<i>Culex quinquefasciatus</i> *	74	93
<i>Danaus plexippus</i>	100	100
<i>Dendroctonus ponderosae</i>	93	93
<i>Diaphorina citri</i>	107	107
<i>Drosophila ananassae</i> *	76	75
<i>Drosophila erecta</i> *	81	78
<i>Drosophila grimshawi</i> *	82	72
<i>Drosophila melanogaster</i> *	256	466
<i>Drosophila mojavensis</i> *	71	71
<i>Drosophila persimilis</i> *	75	69
<i>Drosophila pseudoobscura</i> *	210	273
<i>Drosophila sechellia</i> *	78	76
<i>Drosophila simulans</i> *	135	178
<i>Drosophila virilis</i> *	134	237
<i>Drosophila willistoni</i> *	77	72
<i>Drosophila yakuba</i> *	76	75
<i>Ephemera danica</i>	75	75
<i>Frankliniella occidentalis</i>	85	85
<i>Gerris buenoi</i>	81	81
<i>Glossina morsitans</i>	92	92
<i>Halyomorpha halys</i>	79	79
<i>Harpegnathos saltator</i>	100	100
<i>Heliconius melpomene</i> *	92	97
<i>Homalodisca vitripennis</i>	80	80
<i>Ladona fulva</i>	82	82

<i>Laodelphax striatellus</i>	87	87
<i>Lasioglossum albipes</i>	112	112
<i>Limnophilus lunatus</i>	75	75
<i>Locusta migratoria</i> *	7	14
<i>Lutzomyia longipalpis</i>	74	74
<i>Machilis hrabei</i>	72	72
<i>Manduca sexta</i> *	98	93
<i>Mayetiola destructor</i>	81	81
<i>Megaselia scalaris</i>	48	48
<i>Melitaea cinxia</i>	78	78
<i>Mengenilla moldrzyki</i>	42	42
<i>Microplitis demolitor</i>	92	92
<i>Musca domestica</i>	103	103
<i>Nasonia giraulti</i> *	32	32
<i>Nasonia longicornis</i> *	28	28
<i>Nasonia vitripennis</i> *	53	53
<i>Nilaparvata lugens</i>	84	83
<i>Onthophagus taurus</i>	89	89
<i>Orussus abietinus</i>	98	98
<i>Pediculus humanus</i>	65	65
<i>Piezodorus guildinii</i>	73	73
<i>Plutella xylostella</i> *	133	128
<i>Rhodnius prolixus</i>	80	80
<i>Spodoptera exigua</i> Hiibner	60	60
<i>Timema cristinae</i>	81	81
<i>Tribolium castaneum</i> *	220	430
<i>Tryporyza incertulas</i>	74	73
<i>Zootermopsis nevadensis</i>	90	90

* the miRNA from miRBase

Table S5 The UTRs and CDSs in InsectBase

Species	source	5'UTR	3'UTR	CDS
<i>Acyrtosiphon pisum</i>	UTRDB	6213	5164	
<i>Aedes aegypti</i>	UTRDB	5718	8340	
<i>Aedes albopictus</i>	transcriptome	2219	3278	1104
<i>Anopheles gambiae</i>	UTRDB	4650	3942	
<i>Anopheles sinensis</i>	transcriptome	1391	2293	885
<i>Anthonomus grandis</i>	transcriptome	1543	2618	1121
<i>Apis cerana</i>	transcriptome	4590	6136	3040
<i>Apis mellifera</i>	UTRDB	3354	5872	
<i>Archaeopsylla erinacei</i>	transcriptome	760	1736	387
<i>Aretaon asperrimus</i>	transcriptome	5725	10323	4205
<i>Bactrocera dorsalis</i>	transcriptome	9893	11500	8410
<i>Bactrocera oleae</i>	transcriptome	94	217	75
<i>Belgica antarctica</i>	transcriptome	3777	4600	3122
<i>Bemisia tabaci</i>	transcriptome	2208	3080	1337
<i>Bombus terrestris</i>	transcriptome	2653	4044	1914
<i>Bombyx mori</i>	UTRDB	1351	1354	
<i>Carabus granulatus</i>	transcriptome	1769	3621	970
<i>Ceratitis capitata</i>	transcriptome	10774	12497	9601
<i>Chilo suppressalis</i>	transcriptome	2021	3537	947
<i>Chrysopa pallens</i>	transcriptome	1086	2573	548
<i>Chyphotes mellipes</i>	transcriptome	8744	12622	6693
<i>Cotesia vestalis</i>	transcriptome	3131	5209	2257
<i>Culex quinquefasciatus</i>	UTRDB	1218	2681	
<i>Culicoides sonorensis</i>	transcriptome	5399	5893	4544
<i>Dendroctonus frontalis</i>	transcriptome	2570	5735	1958
<i>Dendroctonus ponderosae</i>	transcriptome	2692	5597	2164
<i>Drosophila ercepeae</i>	transcriptome	1169	2564	737
<i>Drosophila malerkotliana pallens</i>	transcriptome	1252	3786	905
<i>Drosophila melanogaster</i>	UTRDB	11041	10834	
<i>Drosophila merina</i>	transcriptome	1961	3667	1274
<i>Drosophila miranda</i>	transcriptome	5964	6823	4838
<i>Drosophila pseudoananassae nigrens</i>	transcriptome	892	1431	438
<i>Drosophila pseudoananassae pseudoananassae</i>	transcriptome	1201	2230	493
<i>Drosophila serrata</i>	transcriptome	2276	4755	1738
<i>Enallagma hageni</i>	transcriptome	1466	3595	1334
<i>Euschistus heros</i>	transcriptome	1221	2477	815

<i>Extatosoma tiaratum</i>	transcriptome	280	506	210
<i>Forficula auricularia</i>	transcriptome	679	757	434
<i>Frankliniella occidentalis</i>	transcriptome	1208	2448	773
<i>Galleria mellonella</i>	transcriptome	1747	3297	1321
<i>Graminella nigrifrons</i>	transcriptome	3664	6857	2732
<i>Gryllus firmus</i>	transcriptome	966	2756	770
<i>Heliconius melpomene</i>	transcriptome	1440	3028	877
<i>Ips typographus</i>	transcriptome	990	2619	581
<i>Leptopilina boulandi</i>	transcriptome	3153	6410	2568
<i>Leptopilina heterotoma</i>	transcriptome	3361	6949	2662
<i>Lucilia sericata</i>	transcriptome	1173	2302	815
<i>Lucilia sericata embryos</i>	transcriptome	1740	3674	1123
<i>Lucilia sericata female</i>	transcriptome	1881	3496	1225
<i>Lucilia sericata male</i>	transcriptome	1818	3416	1147
<i>Macrosiphum euphorbiae</i>	transcriptome	4228	6259	3145
<i>Medauroidea extrudentata</i>	transcriptome	4929	9094	3787
<i>Melitaea cinxia</i>	transcriptome	221	936	154
<i>Micropterix calthella</i>	transcriptome	914	2483	521
<i>Mischocyttarus flavitarsis</i>	transcriptome	5455	10416	4243
<i>Musca domestica</i>	transcriptome	4103	6770	2667
<i>Nasonia vitripennis</i>	UTRDB	1562	3116	
<i>Nemurella pictetii</i>	transcriptome	1426	1608	1168
<i>Nilaparvata lugens</i>	transcriptome	1738	3683	1121
<i>Onthophagus nigriventris</i>	transcriptome	2137	4198	1248
<i>Osmia cornuta</i>	transcriptome	3400	4734	1973
<i>Ostrinia furnacalis</i>	transcriptome	2201	3290	1032
<i>Ostrinia nubilalis</i>	transcriptome	832	875	443
<i>Ostrinia scapulalis</i>	transcriptome	865	930	456
<i>Pachypsylla venusta</i>	transcriptome	8951	10705	7382
<i>Pararge aegeria</i>	transcriptome	2679	3174	2107
<i>Pediculus humanus</i>	UTRDB	80	97	
<i>Plutella xylostella</i>	transcriptome	4549	7224	2760
<i>Polistes canadensis</i>	transcriptome	3722	8553	2759
<i>Polistes metricus</i>	transcriptome	4324	7244	3313
<i>Priacma serrata</i>	transcriptome	481	2428	371
<i>Sceliphron caementarium</i>	transcriptome	7950	14851	6259
<i>Sialis lutaria</i>	transcriptome	522	1529	315
<i>Sipyloidea sipyilus</i>	transcriptome	4869	8764	3650

<i>Sitodiplosis mosellana</i>	transcriptome	3358	3862	2652
<i>Sphaerophthalma orestes</i>	transcriptome	5852	10719	4648
<i>Spodoptera exigua</i>	transcriptome	8226	4030	1303
<i>Telenomus podisi</i>	transcriptome	5368	9625	3252
<i>Teleopsis dalmanni</i>	transcriptome	7820	14879	5530
<i>Teleopsis whitei</i>	transcriptome	4898	9196	3874
<i>Themira biloba</i>	transcriptome	2782	6117	1987
<i>Trialeurodes vaporariorum</i>	transcriptome	1783	3458	1060
<i>Tribolium castaneum</i>	UTRDB	3221	3617	
<i>Trypoxylus dichotomus</i>	transcriptome	917	1829	633
