

Table S5.

Honeybee immune-related genes differentially expressed in response to SBV and DWV in oral larvae inoculation experiment. Fold change values (log₂ transformed) are shown only for the genes DE in the contrasts. Expression of the genes marked with * was quantified by qRT-PCR. DE genes were identified by both DEseq and edgeR and analyses, adjusted p<0.05 and false discovery rate, FDR <0.05.

Honeybee gene (OGS3 ID)	Drosophila ortholog (Flybase ID)	Gene name / description	Pathway, group	Fold change (log ₂ transformed)			
				Contrast 2	Contrast 3	Contrast 4	Contrast 5
				High SBV+DWV vs. high DWV and control	High DWV vs. control	High SBV+DWV vs. control	High SBV+DWV vs. high DWV
GB41428 *	FBgn0010385	Defensin-1	AMP	9.203	.	9.328	8.738
GB47318	FBgn0032835	Abaecin	AMP	6.474	.	6.143	10.455
GB47546		Apidaecin	AMP	5.322	.	5.423	4.925
GB47618	FBgn0010385	Defensin-2	AMP	10.171	.	9.828	10.730
GB51223 *	FBgn0014002	Hymenoptaecin	AMP	7.894	.	8.057	7.410
GB53576	FBgn0261922	Apisimin	AMP	.	.	2.738	.
GB50013 *	FBgn0036891	Prophenoloxidase-activating enzyme (PPAE)	Melanisation	-2.612	.	-2.791	.
GB48820 *	FBgn0028985	Serpin (NEC LIKE)	Toll / Melanisation	4.681	.	4.867	4.151
GB54611	FBgn0028984	Serpin (NEC LIKE)	Toll / Melanisation	2.092	.	2.027	2.359
GB40699	FBgn0029114	Tollo (Receptor)	Toll	.	.	-1.187	.
GB43456	FBgn0034476	Toll-7 (Receptor)	Toll	-1.681	.	-1.780	.
GB49441	FBgn0003450	persephone-Serine protease	Toll	4.182	.	4.134	4.365
GB54611	FBgn0028984	NEC-like	Toll	2.092	.	2.027	2.359
GB55007	FBgn0030051	persephone-Serine Protease	Toll	2.067	.	1.975	.
GB44055	FBgn0000250	Immune Response Integrator cactus (NF-kappa-B inhibitor)	Toll	.	.	2.372	2.457
GB50418	FBgn0262473	Toll-1 (Receptor)	Toll	2.073	.	2.104	1.962
GB51741	FBgn0030310	Peptidoglycan recognition protein SA	Toll	2.070	.	2.056	2.119
GB52631	FBgn0003495	spatzle	Toll	3.224	.	3.284	3.012
GB51498	FBgn0033402	Myd88	Toll	.	1.549	.	.
GB48707	FBgn0024222	immune response deficient 5	Toll	.	1.340	.	.
GB42500	FBgn0035976	PGRP-LC	Imd	1.515	.	1.462	1.723
GB45648	FBgn0013983	imd	Imd	.	.	1.240	.
GB40445	FBgn0031918	CTL5	C-lectin domain	-1.966	.	-2.041	-1.652
GB43691	FBgn0038017	CTL11	C-lectin domain	-3.657	.	-3.697	-3.490
GB43983	FBgn0030617	CTL12	C-lectin domain	-3.169	.	-3.259	-2.772
GB45248	FBgn0032180	CTL2	C-lectin domain	2.684	.	2.605	3.014
GB46626	FBgn0035199	CTL3	C-lectin domain	.	.	-1.637	.
GB47938	FBgn0031879	CTL4	C-lectin domain	-2.013	.	-2.112	-1.580
GB49260	FBgn0262720	CTL1	C-lectin domain	.	.	.	1.605
GB55225	FBgn0001083	CTL6	C-lectin domain	-3.050	.	-3.096	-2.865
GB47977	FBgn0086906		IG Superfamily Genes	-2.984	.	-3.124	-2.315
GB49767	FBgn0263219		IG Superfamily Genes	.	.	-2.263	.
GB53012	FBgn0010473		IG Superfamily Genes	-1.922	.	-2.073	.
GB55483	FBgn0005666		IG Superfamily Genes	-2.097	.	-2.276	.
GB40741	FBgn0052133	ptip	Immune system process	.	.	-1.324	.
GB40759	FBgn0043841	virus-induced RNA 1	Immune system process	2.053	.	1.940	2.567
GB41629	FBgn0025936	Eph receptor tyrosine kinase	Immune system process	.	.	-1.204	.
GB41740	FBgn0021760	chromosome bows	Immune system process	.	.	-1.231	.
GB41850	FBgn0029167	Hemolectin	Immune system process	-1.549	.	-1.573	.
GB42579	FBgn0262738	no receptor potential A	Immune system process	.	.	-1.184	.
GB42608	FBgn0264294	Cytochrome b5	Immune system process	1.439	.	1.379	.
GB42981	FBgn0040323	Gram-negative bacteria binding protein 1	Immune system process	2.806	.	2.834	2.707
GB43099	FBgn0028982	Spt6	Immune system process	.	.	-1.252	.
GB44213	FBgn0014141	cheerio	Immune system process	2.110	.	1.961	2.836
GB44931	FBgn0028436	ECSIT	Immune system process	.	.	.	-2.668
GB45135	FBgn0028982	Spt6	Immune system process	1.704	.	1.693	1.742
GB45708	FBgn0031975	Transglutaminase	Immune system process	5.015	.	4.758	6.397
GB46165	FBgn0010389	heartless	Immune system process	.	.	-1.939	.
GB46302	FBgn0262738	no receptor potential A	Immune system process	-2.634	.	-2.761	.
GB46338	FBgn0043550	Tetraspanin 68C	Immune system process	.	.	-1.593	.
GB47201	FBgn0004657	mysospheroid	Immune system process	1.406	.	1.338	1.686
GB47224	FBgn0000568	Ecdysone-induced protein 75B	Immune system process	-2.831	.	-2.951	-2.280
GB47805	FBgn0043575	PGRP-SC2	Immune system process	4.172	.	3.907	5.989
GB49657	FBgn0004606	Zn finger homeodomain 1	Immune system process	1.538	.	1.430	2.020
GB49949	FBgn0035850	Autophagy-specific gene 18	Immune system process	.	.	1.067	.
GB49979	FBgn0043550	Tetraspanin 68C	Immune system process	-4.806	.	-4.904	.
GB51481	FBgn0031464	Dual oxidase	Immune system process	-1.559	.	-1.552	.
GB51962	FBgn0086902	kismet	Immune system process	.	.	-1.377	.
GB52158	FBgn0031975	Transglutaminase	Immune system process	1.764	.	1.769	1.743
GB52278	FBgn0014141	cheerio	Immune system process	1.804	.	1.670	2.434
GB52721	FBgn0002576	lozenge	Immune system process	4.204	.	4.310	3.850
GB54764	FBgn0026404	Nedd2-like caspase	Immune system process	.	.	1.208	.
GB54852	FBgn0032006	PDGF- and VEGF-receptor related	Immune system process	.	.	1.070	.
GB55808	FBgn0020306		Immune system process	-1.665	.	-1.737	.
GB42358	FBgn0087011		immune-related	-4.576	.	-4.604	-4.458

GB42685	FBgn0040323		immune-related	1.502	.	1.390	2.001
GB48687	FBgn0243514		immune-related	3.132	.	2.992	3.798
GB50507	FBgn0261514		immune-related	.	.	-2.137	.
GB50508	FBgn0243514		immune-related	2.448	.	2.326	3.007
GB42244	FBgn0043903	domeless	JAK-STAT cascade	3.878	.	3.816	4.123
GB52985	FBgn0043884	multiple ankyrin repeats single KH domain	JAK-STAT cascade	.	.	-1.286	.
GB44634	FBgn0243512		JNK cascade	3.327	.	3.329	3.306
GB45540	FBgn0000097	anterior open	JNK cascade	-1.634	.	-1.698	.
GB53318	FBgn0001291	Jun-related antigen	JNK cascade	2.851	.	2.812	2.985
GB47104	FBgn0034162		Lysozyme	2.259	.	2.293	2.141
GB40306	FBgn0010435	AmSCR-B8	Scav. Receptor A	-2.763	.	-2.873	.
GB44045	FBgn0015924	AmSCR-B9	Scav. Receptor A	2.391	.	1.520	.
GB50866	FBgn0010435	AmSCR-B10	Scav. Receptor A	-2.657	.	-2.733	-2.338
GB52097	FBgn0058006	AmSCR-B1	Scav. Receptor A	.	.	-1.967	.
GB40137	FBgn0038595	SP17	serine protease	5.775	.	5.939	5.248
GB41097	FBgn0051954	SP18	serine protease	7.724	.	7.382	8.286
GB41178	FBgn0038727	SP15	serine protease	-4.149	.	-4.257	.
GB42804	FBgn0033192	SPH54	serine protease	-2.412	.	-2.515	-1.956
GB44146	FBgn0034709	0	serine protease	4.144	.	3.943	5.176
GB45700	FBgn0000533	cSP2	serine protease	2.153	.	2.055	2.585
GB45701	FBgn0027930	cSP1	serine protease	2.852	.	2.748	3.305
GB48079	FBgn0051954	SP22	serine protease	4.075	.	4.578	.
GB49552	FBgn0035501	cSP3	serine protease	4.555	.	4.601	4.373
GB49946	FBgn0011653	cSPH41	serine protease	-2.974	.	-3.070	.
GB50290	FBgn0033033	cSPH55	serine protease	2.937	.	2.878	3.172
GB50586	FBgn0003319	SP16	serine protease	-1.651	.	-1.728	.
GB50648	FBgn0003319	cSP25	serine protease	-2.817	.	-2.939	.
GB50650	FBgn0033359	cSP33	serine protease	-4.769	.	-4.846	-4.418
GB50761	FBgn0038485	SP36	serine protease	3.308	.	3.258	3.474
GB52191	FBgn0051217	SP49	serine protease	2.432	.	2.455	2.350
GB52598	FBgn0032213	cSPH42	serine protease	4.552	.	4.486	4.821
GB54762	FBgn0033362	cSP6	serine protease	-3.142	.	-3.213	.
GB54775	FBgn0030027	SPH56	serine protease	-3.193	.	-3.241	-2.997