

Additional file 4. Malacostracans Toll pathway components.

Additional file 4A. Toll-like receptors

Arthropoda

Class (subphylum)	Species	Tissue type	Total gene counts	References
Insecta	Drosophila melanogaster	whole organism	9	McTaggart et al., 2009
Insecta	Anopheles gambiae	whole organism	10	McTaggart et al., 2009
Insecta	Aedes aegypti	whole organism	12	McTaggart et al., 2009
Chilopoda (Myriapoda)	Strigamia maritima	whole organism	27	Palmer et al., 2015
Arachnida (Chelicerata)	Mesobuthus martensii	whole organism	14	Palmer et al., 2015
Arachnida (Chelicerata)	Ixodes scapularis	whole organism	4	Palmer et al., 2015
Branchiopoda (Crustacea)	Daphnia pulex	whole organism	5	Palmer et al., 2015

Malacostraca

Order	Species/Datasets	Tissue type	Total gene counts with both LRR and TIR motifs
Amphipoda	Echinogammarus veneris	NA	0
Amphipoda	Gammarus chevreuxi	NA	4
Amphipoda	Gammarus pulex	NA	0
Amphipoda	Hyalella azteca	NA	1
Amphipoda	Melita plumulosa	whole organism	1
Amphipoda	Parhyale hawaiiensis	whole organism	5
Amphipoda	Talitrus saltator	brain	2
Decapoda	Astacus astacus	hepatopancreas, ovaries, green glands, abdominal musculature	3
Decapoda	Astacus leptodactylus	hypodermis, Y organ, hepatopancreas, gills, hemocytes, muscle	8
Decapoda	Callinectes sapidus	gill 7	1
Decapoda	Cancer borealis	nervous system	7
Decapoda	Carcinus maenas	NA	1
Decapoda	Cherax quadricarinatus	hypodermis and gastrolith disc, heart, kidney, liver, nerve, testis	5
Decapoda	Eriocheir sinensis	eyestalk, Y-organ, and hepatopancreas	4
Decapoda	Farfantepenaeus aztecus	hepatopancreas	1
Decapoda	Homarus americanus	hepatopancreas	6
Decapoda	Hyas araneus	nervous system	1
Decapoda	Litopenaeus vannamei	adult	1
Decapoda	Macrobrachium nipponense	Ghaffari et al., 2014	5
Decapoda	Pacifastacus leniusculus	NA	4
Decapoda	Palaemon argentinus	Brain, HPT, Hemocyte, Hepatopancreas	1
Decapoda	Penaeus monodon	hepatopancreas	0
Decapoda		whole organism	2
Decapoda		hepatopancreas	
Decapoda		Eyestalk, brain, hemocytes, gills, testis, ovary, hepatopancreas, heart, green gland, ventral ganglia, Y-organ,	
Decapoda	Procambarus clarkii	hypodermis, muscle	7
Decapoda	Scylla olivacea	Na	1
Decapoda	Scylla paramamosain	gill	0
Euphausiacea	Euphausia superba	NA	0
Euphausiacea	Meganyctiphanes norvegica	adult	1
Isopoda	Asellus aquaticus	NA	0
Isopoda	Bragasellus molinai	whole organism	0
Isopoda	Bragasellus peltatus	whole organism	2
Isopoda	Proasellus aragonensis	whole organism	1
Isopoda	Proasellus arthrodilus	whole organism	3
Isopoda	Proasellus assaforensis	whole organism	2
Isopoda	Proasellus beticus	whole organism	1
Isopoda	Proasellus cantabricus	whole organism	3
Isopoda	Proasellus cavaticus	whole organism	3
Isopoda	Proasellus coiffaiti	whole organism	3
Isopoda	Proasellus coxalis	whole organism	1
Isopoda	Proasellus ebrensis	whole organism	3
Isopoda	Proasellus escolai	whole organism	2
Isopoda	Proasellus grafi	whole organism	8
Isopoda	Proasellus granadensis	whole organism	0
Isopoda	Proasellus hercegovinensis	whole organism	4
Isopoda	Proasellus ibericus	whole organism	4
Isopoda	Proasellus jaloniacus	whole organism	3
Isopoda	Proasellus karamani	whole organism	2
Isopoda	Proasellus margalefi	whole organism	0
Isopoda	Proasellus meridianus	whole organism	3
Isopoda	Proasellus ortizi	whole organism	3

Isopoda	Proasellus parvulus	whole organism	6
Isopoda	Proasellus racovitzai	whole organism	2
Isopoda	Proasellus rectus	whole organism	1
Isopoda	Proasellus solanasi	whole organism	2
Isopoda	Proasellus spelaeus	whole organism	3
Mysida	Neomysis awatschensis	whole organism	0
Total malacostracan genes			136

Additional file 4B. Tube.

Arthropoda

Class (subphylum)	Species	Tissue type	Total gene counts	References
Insecta	Drosophila melanogaster	whole organism	1	Palmer et al., 2015
Insecta	Anopheles gambiae	whole organism	1	McTaggart et al., 2009
Insecta	Aedes aegypti	whole organism	1	McTaggart et al., 2009
Chilopoda (Myriapoda)	Strigamia maritima	whole organism	0	Palmer et al., 2015
Arachnida (Chelicerata)	Mesobuthus martensii	whole organism	1	Palmer et al., 2015
Arachnida (Chelicerata)	Ixodes scapularis	whole organism	0	Palmer et al., 2015
Branchiopoda (Crustacea)	Daphnia pulex	whole organism	0	McTaggart et al., 2009

Malacostraca

Order	Species/Datasets	Tissue type	Tube	Total number of non-redundant genes per species
Amphipoda	Echinogammarus veneris	NA	0	0
Amphipoda	Gammarus chevreuxi	NA	0	0
Amphipoda	Gammarus pulex	NA	0	0
Amphipoda	Hyalella azteca_1	NA	0	
Amphipoda	Hyalella azteca_2	NA	0	
Amphipoda	Hyalella azteca_3	whole organism	0	0
Amphipoda	Melita plumulosa	whole organism	0	0
Amphipoda	Parhyale hawaiiensis	whole organism	0	0
Amphipoda	Talitrus saltator	brain	0	0
Decapoda	Astacus astacus	hepatopancreas, ovaries, green gland	1	1
Decapoda	Astacus leptodactylus_1	hypodermis; Y organ	1	
Decapoda	Astacus leptodactylus_2	hepatopancreas	1	
Decapoda	Astacus leptodactylus_3	hypodermis, Y organ, hepatopancreas	1	1
Decapoda	Callinectes sapidus	gill 7	0	0
Decapoda	Cancer borealis	nervous system	1	1
Decapoda	Carcinus maenas	NA	0	0
Decapoda	Cherax quadricarinatus_1	hypodermis and gastrolith disc	0	
Decapoda	Cherax quadricarinatus_2	heart, kidney, liver, nerve, testis	0	
Decapoda	Cherax quadricarinatus_3	heart, kidney, liver, nerve, testis	0	0
Decapoda	Eriocheir sinensis_1	NA	1	
Decapoda	Eriocheir sinensis_2	eyestalk, Y-organ, and hepatopancreas	1	
Decapoda	Eriocheir sinensis_3	hepatopancreas	0	1
Decapoda	Farfantepenaeus aztecus	hepatopancreas	1	1
Decapoda	Homarus americanus	nervous system	1	1
Decapoda	Hyas araneus_1	adult	0	
Decapoda	Hyas araneus_2	gill	1	1
Decapoda	Litopenaeus vannamei_1	Ghaffari et al., 2014	1	
Decapoda	Litopenaeus vannamei_2	hepatopancreas	1	
Decapoda	Litopenaeus vannamei_3	hepatopancreas	1	
Decapoda	Litopenaeus vannamei_4	hemocytes	1	1
Decapoda	Macrobrachium nipponense	NA	1	1
Decapoda	Pacifastacus leniusculus	Brain, HPT, Hemocyte, Hepatopancreas	1	1
Decapoda	Palaemon argentinus	whole organism	0	0
Decapoda	Penaeus monodon_1	hepatopancreas	1	
Decapoda	Penaeus monodon_2	hepatopancreas	1	1
Decapoda	Procambarus clarkii_1	Eyestalk	1	
Decapoda	Procambarus clarkii_2	Eyestalk, brain, hemocytes, gills, testis	1	1
Decapoda	Scylla olivacea	Na	1	1
Decapoda	Scylla paramamosain	gill	1	1
Euphausiacea	Euphausia superba	NA	0	0
Euphausiacea	Meganyctiphanes norvegica	adult	0	0
Isopoda	Asellus aquaticus	NA	0	0
Isopoda	Bragasellus molinai	whole organism	1	1
Isopoda	Bragasellus peltatus	whole organism	1	1
Isopoda	Proasellus aragonensis	whole organism	0	0
Isopoda	Proasellus arthrotilus	whole organism	0	0
Isopoda	Proasellus assaforensis	whole organism	1	1
Isopoda	Proasellus beticus	whole organism	0	0
Isopoda	Proasellus cantabricus	whole organism	0	0
Isopoda	Proasellus cavaticus	whole organism	0	0
Isopoda	Proasellus coiffaiti	whole organism	0	0
Isopoda	Proasellus coxalis	whole organism	0	0
Isopoda	Proasellus ebreensis	whole organism	0	0
Isopoda	Proasellus escolai	whole organism	0	0
Isopoda	Proasellus grafi	whole organism	0	0
Isopoda	Proasellus granadensis	whole organism	0	0
Isopoda	Proasellus hercegovinensis	whole organism	0	0
Isopoda	Proasellus ibericus	whole organism	0	0
Isopoda	Proasellus jaloniacus	whole organism	0	0
Isopoda	Proasellus karamani	whole organism	0	0
Isopoda	Proasellus margalefi	whole organism	0	0

Isopoda	Proasellus meridianus	whole organism	0	0
Isopoda	Proasellus ortizi	whole organism	0	0
Isopoda	Proasellus parvulus	whole organism	0	0
Isopoda	Proasellus racovitzai	whole organism	0	0
Isopoda	Proasellus rectus	whole organism	0	0
Isopoda	Proasellus solanasi	whole organism	0	0
Isopoda	Proasellus spelaeus	whole organism	0	0
Mysida	Neomysis awatschensis	whole organism	0	0
Total malacostracan genes				17

Additional file 4C. Pelle.

Arthropoda

Class (subphylum)	Species	Tissue type	Total gene counts	References
Insecta	Drosophila melanogaster	whole organism	1	Palmer et al., 2015
Insecta	Anopheles gambiae	whole organism	1	McTaggart et al., 2009
Insecta	Aedes aegypti	whole organism	1	McTaggart et al., 2009
Chilopoda (Myriapoda)	Strigamia maritima	whole organism	1	Palmer et al., 2015
Arachnida (Chelicerata)	Mesobuthus martensii	whole organism	0	Palmer et al., 2015
Arachnida (Chelicerata)	Ixodes scapularis	whole organism	2	Palmer et al., 2015
Branchiopoda (Crustacea)	Daphnia pulex	whole organism	2	McTaggart et al., 2009

Malacostraca

Order	Species/Datasets	Tissue type	Total gene counts	Total number of non-redundant genes per species
Amphipoda	Echinogammarus veneris	NA	2	2
Amphipoda	Gammarus chevreuxi	NA	1	1
Amphipoda	Gammarus pulex	NA	1	1
Amphipoda	Hyalella azteca_1	NA	1	
Amphipoda	Hyalella azteca_2	NA	1	
Amphipoda	Hyalella azteca_3	whole organism	1	1
Amphipoda	Melita plumulosa	whole organism	1	1
Amphipoda	Parhyale hawaiiensis	whole organism	2	2
Amphipoda	Talitrus saltator	brain	2	2
		hepatopancreas, ovaries, green		
Decapoda	Astacus astacus	glands, abdominal musculature	1	1
Decapoda	Astacus leptodactylus_1	hypodermis; Y organ	1	
Decapoda	Astacus leptodactylus_2	hepatopancreas	0	
		hypodermis, Y organ,		
		hepatopancreas, gills,		
Decapoda	Astacus leptodactylus_3	hematocytes, muscle	1	1
Decapoda	Callinectes sapidus	gill 7	1	1
Decapoda	Cancer borealis	nervous system	1	1
Decapoda	Carcinus maenas	NA	0	
Decapoda	Cherax quadricarinatus_1	hypodermis and gastrolith disc	0	
Decapoda	Cherax quadricarinatus_2	heart, kidney, liver, nerve, testis	1	
Decapoda	Cherax quadricarinatus_3	heart, kidney, liver, nerve, testis	1	1
Decapoda	Eriocheir sinensis_1	NA	1	
		eyestalk, Y-organ, and		
Decapoda	Eriocheir sinensis_2	hepatopancreas	1	
Decapoda	Eriocheir sinensis_3	hepatopancreas	0	1
Decapoda	Farfantepenaeus aztecus	hepatopancreas	1	1
Decapoda	Homarus americanus	nervous system	2	2
Decapoda	Hyas araneus_1	adult	0	
Decapoda	Hyas araneus_2	gill	1	1
Decapoda	Litopenaeus vannamei_1	Ghaffari et al., 2014	2	
Decapoda	Litopenaeus vannamei_2	hepatopancreas	1	
Decapoda	Litopenaeus vannamei_3	hepatopancreas	1	
Decapoda	Litopenaeus vannamei_4	hemocytes	1	2
Decapoda	Macrobrachium nipponense	NA	1	1
		Brain, HPT, Hemocyte,		
Decapoda	Pacifastacus leniusculus	Hepatopancreas	0	
Decapoda	Palaemon argentinus	whole organism	0	
Decapoda	Penaeus monodon_1	hepatopancreas	1	
Decapoda	Penaeus monodon_2	hepatopancreas	1	1
Decapoda	Procambarus clarkii_1	Eyestalk	1	
		Eyestalk, brain, hemocytes, gills,		
		testis, ovary, hepatopancreas,		
		heart, green gland,		
		ventralganglia, Y-organ,		
Decapoda	Procambarus clarkii_2	hypodermis, muscle	1	1
Decapoda	Scylla olivacea	Na	1	1
Decapoda	Scylla paramamosain	gill	uniprot	1
Euphausiacea	Euphausia superba	NA	1	1
Euphausiacea	Meganctiphanes norvegica	adult	1	1
Isopoda	Asellus aquaticus	NA	0	
Isopoda	Bragasellus molinai	whole organism	1	1
Isopoda	Bragasellus peltatus	whole organism	1	1
Isopoda	Proasellus aragonensis	whole organism	1	1
Isopoda	Proasellus arthrodilus	whole organism	1	1
Isopoda	Proasellus assaforensis	whole organism	1	1
Isopoda	Proasellus beticus	whole organism	2	2
Isopoda	Proasellus cantabricus	whole organism	1	1
Isopoda	Proasellus cavaticus	whole organism	1	1
Isopoda	Proasellus coiffaiti	whole organism	2	2
Isopoda	Proasellus coxalis	whole organism	2	2

Isopoda	Proasellus ebreensis	whole organism	1	1
Isopoda	Proasellus escolai	whole organism	1	1
Isopoda	Proasellus grafi	whole organism	2	2
Isopoda	Proasellus granadensis	whole organism	1	1
Isopoda	Proasellus hercegovinensis	whole organism	2	2
Isopoda	Proasellus ibericus	whole organism	1	1
Isopoda	Proasellus jaloniacus	whole organism	1	1
Isopoda	Proasellus karamani	whole organism	1	1
Isopoda	Proasellus margalefi	whole organism	1	1
Isopoda	Proasellus meridianus	whole organism	1	1
Isopoda	Proasellus ortizi	whole organism	1	1
Isopoda	Proasellus parvulus	whole organism	1	1
Isopoda	Proasellus racovitzai	whole organism	1	1
Isopoda	Proasellus rectus	whole organism	2	2
Isopoda	Proasellus solanasi	whole organism	1	1
Isopoda	Proasellus spelaeus	whole organism	1	1
Mysida	Neomysis awatschensis	whole organism	0	0
Total malacostracan genes				61

Additional file 4D. MyD88.

Arthropoda

Class (subphylum)	Species	Tissue type	Total gene counts	References
Insecta	Drosophila melanogaster	whole organism	1	Palmer et al., 2015
Insecta	Anopheles gambiae	whole organism	1	McTaggart et al., 2009
Insecta	Aedes aegypti	whole organism	1	McTaggart et al., 2009
Chilopoda (Myriapoda)	Strigamia maritima	whole organism	1	Palmer et al., 2015
Arachnida (Chelicerata)	Mesobuthus martensii	whole organism	1	Palmer et al., 2015
Arachnida (Chelicerata)	Ixodes scapularis	whole organism	1	Palmer et al., 2015
Branchiopoda (Crustacea)	Daphnia pulex	whole organism	1	McTaggart et al., 2009

Malacostraca

Order	Species/Datasets	Tissue type	Total gene counts	Total number of non-redundant genes per species
Amphipoda	Echinogammarus veneris	NA	0	0
Amphipoda	Gammarus chevreuxi	NA	0	0
Amphipoda	Gammarus pulex	NA	0	0
Amphipoda	Hyalella azteca_1	NA	0	0
Amphipoda	Hyalella azteca_2	NA	0	0
Amphipoda	Hyalella azteca_3	whole organism	0	0
Amphipoda	Melita plumulosa	whole organism	0	0
Amphipoda	Parhyale hawaiensis	whole organism	1	1
Amphipoda	Talitrus saltator	brain	1	1
		hepatopancreas, ovaries, green		
Decapoda	Astacus astacus	glands, abdominal musculature	1	1
Decapoda	Astacus leptodactylus_1	hypodermis; Y organ	1	
Decapoda	Astacus leptodactylus_2	hepatopancreas	0	
		hypodermis, Y organ,		
		hepatopancreas, gills, hematocytes,		
Decapoda	Astacus leptodactylus_3	muscle	1	1
Decapoda	Callinectes sapidus	gill 7	1	1
Decapoda	Cancer borealis	nervous system	1	1
Decapoda	Carcinus maenas	NA	1	1
Decapoda	Cherax quadricarinatus_1	hypodermis and gastrolith disc	0	
Decapoda	Cherax quadricarinatus_2	heart, kidney, liver, nerve, testis	1	
Decapoda	Cherax quadricarinatus_3	heart, kidney, liver, nerve, testis	1	1
Decapoda	Eriocheir sinensis_1	NA	1	
		eyestalk, Y-organ, and		
Decapoda	Eriocheir sinensis_2	hepatopancreas	1	
Decapoda	Eriocheir sinensis_3	hepatopancreas	0	1
Decapoda	Farfantepenaeus aztecus	hepatopancreas	1	1
Decapoda	Homarus americanus	nervous system	1	1
Decapoda	Hyas araneus_1	adult	0	
Decapoda	Hyas araneus_2	gill	1	1
Decapoda	Litopenaeus vannamei_1	Ghaffari et al., 2014	1	
Decapoda	Litopenaeus vannamei_2	hepatopancreas	1	
Decapoda	Litopenaeus vannamei_3	hepatopancreas	1	
Decapoda	Litopenaeus vannamei_4	hemocytes	1	1
Decapoda	Macrobrachium nipponense	NA	1	1
		Brain, HPT, Hemocyte,		
Decapoda	Pacifastacus leniusculus	Hepatopancreas	0	0
Decapoda	Palaemon argentinus	whole organism	0	0
Decapoda	Penaeus monodon_1	hepatopancreas	1	
Decapoda	Penaeus monodon_2	hepatopancreas	1	1
Decapoda	Procambarus clarkii_1	Eyestalk	1	1
		Eyestalk, brain, hemocytes, gills,		
		testis, ovary, hepatopancreas,		
		heart, green gland, ventralganglia,		
Decapoda	Procambarus clarkii_2	Y-organ, hypodermis, muscle	1	1
Decapoda	Scylla olivacea	Na	0	0
Decapoda	Scylla paramamosain	gill	0	0
Euphausiacea	Euphausia superba	NA	0	0
Euphausiacea	Meganyctiphanes norvegica	adult	0	0
Isopoda	Asellus aquaticus	NA	1	1
Isopoda	Bragasellus molinai	whole organism	1	1
Isopoda	Bragasellus peltatus	whole organism	1	1
Isopoda	Proasellus aragonensis	whole organism	1	1
Isopoda	Proasellus arthrodilus	whole organism	1	1
Isopoda	Proasellus assaforensis	whole organism	1	1
Isopoda	Proasellus beticus	whole organism	1	1
Isopoda	Proasellus cantabricus	whole organism	1	1
Isopoda	Proasellus cavaticus	whole organism	1	1
Isopoda	Proasellus coiffaiti	whole organism	1	1
Isopoda	Proasellus coxalis	whole organism	1	1
Isopoda	Proasellus ebreensis	whole organism	1	1

Isopoda	<i>Proasellus escolai</i>	whole organism	1	1
Isopoda	<i>Proasellus grafi</i>	whole organism	1	1
Isopoda	<i>Proasellus granadensis</i>	whole organism	1	1
Isopoda	<i>Proasellus hercegovinensis</i>	whole organism	1	1
Isopoda	<i>Proasellus ibericus</i>	whole organism	1	1
Isopoda	<i>Proasellus jaloniacus</i>	whole organism	1	1
Isopoda	<i>Proasellus karamani</i>	whole organism	1	1
Isopoda	<i>Proasellus margalefi</i>	whole organism	0	0
Isopoda	<i>Proasellus meridianus</i>	whole organism	1	1
Isopoda	<i>Proasellus ortizi</i>	whole organism	1	1
Isopoda	<i>Proasellus parvulus</i>	whole organism	1	1
Isopoda	<i>Proasellus racovitzai</i>	whole organism	1	1
Isopoda	<i>Proasellus rectus</i>	whole organism	1	1
Isopoda	<i>Proasellus solanasi</i>	whole organism	1	1
Isopoda	<i>Proasellus spelaeus</i>	whole organism	1	1
Mysida	<i>Neomysis awatschensis</i>	whole organism	1	1
Total malacostracan genes				44

Additional file 4E. Cactus.

Arthropoda

Class (subphylum)	Species	Tissue type	Total gene counts	References
Insecta	Drosophila melanogaster	whole organism	1	Palmer et al., 2015
Insecta	Anopheles gambiae	whole organism	1	McTaggart et al., 2009
Insecta	Aedes aegypti	whole organism	1	McTaggart et al., 2009
Chilopoda (Myriapoda)	Strigamia maritima	whole organism	1	Palmer et al., 2015
Arachnida (Chelicerata)	Mesobuthus martensii	whole organism	2	Palmer et al., 2015
Arachnida (Chelicerata)	Ixodes scapularis	whole organism	1	Palmer et al., 2015
Branchiopoda (Crustacea)	Daphnia pulex	whole organism	2	McTaggart et al., 2009

Malacostraca

Order	Species/Datasets	Tissue type	Total gene counts	Total number of non-redundant genes per species
Amphipoda	Echinogammarus veneris	NA	0	0
Amphipoda	Gammarus chevreuxi	NA	1	1
Amphipoda	Gammarus pulex	NA	1	1
Amphipoda	Hyaella azteca_1	NA	0	
Amphipoda	Hyaella azteca_2	NA	0	
Amphipoda	Hyaella azteca_3	whole organism	1	1
Amphipoda	Melita plumulosa	whole organism	1	1
Amphipoda	Parhyale hawaiensis	whole organism	1	1
Amphipoda	Talitrus saltator	brain	1	1
		hepatopancreas, ovaries, green		
Decapoda	Astacus astacus	glands, abdominal musculature	1	1
Decapoda	Astacus leptodactylus_1	hypodermis; Y organ	1	
Decapoda	Astacus leptodactylus_2	hepatopancreas	1	
		hypodermis, Y organ,		
		hepatopancreas, gills, hemocytes,		
Decapoda	Astacus leptodactylus_3	muscle	1	1
Decapoda	Callinectes sapidus	gill 7	1	1
Decapoda	Cancer borealis	nervous system	1	1
Decapoda	Carcinus maenas	NA	0	
Decapoda	Cherax quadricarinatus_1	hypodermis and gastrolith disc	1	
Decapoda	Cherax quadricarinatus_2	heart, kidney, liver, nerve, testis	1	
Decapoda	Cherax quadricarinatus_3	heart, kidney, liver, nerve, testis	1	1
Decapoda	Eriocheir sinensis_1	NA	1	
		eyestalk, Y-organ, and		
Decapoda	Eriocheir sinensis_2	hepatopancreas	1	
Decapoda	Eriocheir sinensis_3	hepatopancreas	1	1
Decapoda	Farfantepenaeus aztecus	hepatopancreas	1	1
Decapoda	Homarus americanus	nervous system	1	1
Decapoda	Hyas araneus_1	adult	0	
Decapoda	Hyas araneus_2	gill	1	1
Decapoda	Litopenaeus vannamei_1	Ghaffari et al., 2014	1	
Decapoda	Litopenaeus vannamei_2	hepatopancreas	1	
Decapoda	Litopenaeus vannamei_3	hepatopancreas	1	
Decapoda	Litopenaeus vannamei_4	hemocytes	1	1
Decapoda	Macrobrachium nipponense	NA	1	1
		Brain, HPT, Hemocyte,		
Decapoda	Pacifastacus leniusculus	Hepatopancreas	0	
Decapoda	Palaemon argentinus	whole organism	1	1
Decapoda	Penaeus monodon_1	hepatopancreas	1	
Decapoda	Penaeus monodon_2	hepatopancreas	1	1
Decapoda	Procambarus clarkii_1	Eyestalk	1	
		Eyestalk, brain, hemocytes, gills,		
		testis, ovary, hepatopancreas, heart,		
		green gland, ventralganglia, Y-organ,		
Decapoda	Procambarus clarkii_2	hypodermis, muscle	1	1
Decapoda	Scylla olivacea	Na	1	1
Decapoda	Scylla paramamosain	gill	0	0
Euphausiacea	Euphausia superba	NA	0	0
Euphausiacea	Meganyctiphanes norvegica	adult	0	0
Isopoda	Asellus aquaticus	NA	1	1
Isopoda	Bragasellus molinai	whole organism	0	0
Isopoda	Bragasellus peltatus	whole organism	1	1
Isopoda	Proasellus aragonensis	whole organism	1	1
Isopoda	Proasellus arthrodilus	whole organism	1	1
Isopoda	Proasellus assaforensis	whole organism	1	1
Isopoda	Proasellus beticus	whole organism	0	0
Isopoda	Proasellus cantabricus	whole organism	1	1
Isopoda	Proasellus cavaticus	whole organism	1	1
Isopoda	Proasellus coiffaiti	whole organism	1	1
Isopoda	Proasellus coxalis	whole organism	1	1
Isopoda	Proasellus ebreensis	whole organism	1	1

Isopoda	Proasellus escolai	whole organism	0	0
Isopoda	Proasellus grafi	whole organism	1	1
Isopoda	Proasellus granadensis	whole organism	1	1
Isopoda	Proasellus hercegovinensis	whole organism	1	1
Isopoda	Proasellus ibericus	whole organism	1	1
Isopoda	Proasellus jaloniacus	whole organism	1	1
Isopoda	Proasellus karamani	whole organism	1	1
Isopoda	Proasellus margalefi	whole organism	1	1
Isopoda	Proasellus meridianus	whole organism	1	1
Isopoda	Proasellus ortizi	whole organism	1	1
Isopoda	Proasellus parvulus	whole organism	1	1
Isopoda	Proasellus racovitzai	whole organism	1	1
Isopoda	Proasellus rectus	whole organism	1	1
Isopoda	Proasellus solanasi	whole organism	1	1
Isopoda	Proasellus spelaeus	whole organism	1	1
Mysida	Neomysis awatschensis	whole organism	1	1
Total malacostracan genes				46

Additional file 4F. Dorsal.

Arthropoda

Class (subphylum)	Species	Tissue type	Total gene counts	References
Insecta	Drosophila melanogaster	whole organism	1	Palmer et al., 2015
Insecta	Anopheles gambiae	whole organism	1	ImmunoDB
Insecta	Aedes aegypti	whole organism	1	ImmunoDB
Chilopoda (Myriapoda)	Strigamia maritima	whole organism	1	Palmer et al., 2015
Arachnida (Chelicerata)	Mesobuthus martensii	whole organism	1	Palmer et al., 2015
Arachnida (Chelicerata)	Ixodes scapularis	whole organism	1	Palmer et al., 2015
Branchiopoda (Crustacea)	Daphnia pulex	whole organism	1	Palmer et al., 2015

Malacostraca

Order	Species/Datasets	Tissue type	Total gene counts	Total number of non-redundant genes per species
Amphipoda	Echinogammarus veneris	NA	0	0
Amphipoda	Gammarus chevreuxi	NA	0	0
Amphipoda	Gammarus pulex	NA	0	0
Amphipoda	Hyalella azteca_1	NA	0	0
Amphipoda	Hyalella azteca_2	NA	0	
Amphipoda	Hyalella azteca_3	whole organism	1	1
Amphipoda	Melita plumulosa	whole organism	0	0
Amphipoda	Parhyale hawaiiensis	whole organism	1	1
Amphipoda	Talitrus saltator	brain	1	1
		hepatopancreas, ovaries, green		
Decapoda	Astacus astacus	glands, abdominal musculature	0	0
Decapoda	Astacus leptodactylus_1	hypodermis; Y organ	1	
Decapoda	Astacus leptodactylus_2	hepatopancreas	1	
		hypodermis, Y organ,		
		hepatopancreas, gills,		
Decapoda	Astacus leptodactylus_3	hematocytes, muscle	1	1
Decapoda	Callinectes sapidus	gill 7	1	1
Decapoda	Cancer borealis	nervous system	1	1
Decapoda	Carcinus maenas	NA	1	1
Decapoda	Cherax quadricarinatus_1	hypodermis and gastrolith disc	1	
Decapoda	Cherax quadricarinatus_2	heart, kidney, liver, nerve, testis	1	
Decapoda	Cherax quadricarinatus_3	heart, kidney, liver, nerve, testis	1	1
Decapoda	Eriocheir sinensis_1	NA	1	
		eyestalk, Y-organ, and		
Decapoda	Eriocheir sinensis_2	hepatopancreas	1	
Decapoda	Eriocheir sinensis_3	hepatopancreas	1	1
Decapoda	Farfantepenaeus aztecus	hepatopancreas	1	1
Decapoda	Homarus americanus	nervous system	1	1
Decapoda	Hyas araneus_1	adult	0	
Decapoda	Hyas araneus_2	gill	1	1
Decapoda	Litopenaeus vannamei_1	Ghaffari et al., 2014	1	
Decapoda	Litopenaeus vannamei_2	hepatopancreas	1	
Decapoda	Litopenaeus vannamei_3	hepatopancreas	1	
Decapoda	Litopenaeus vannamei_4	hemocytes	1	1
Decapoda	Macrobrachium nipponense	NA	1	1
		Brain, HPT, Hemocyte,		
Decapoda	Pacifastacus leniusculus	Hepatopancreas	1	1
Decapoda	Palaemon argentinus	whole organism	0	0
Decapoda	Penaeus monodon_1	hepatopancreas	1	
Decapoda	Penaeus monodon_2	hepatopancreas	1	1
Decapoda	Procambarus clarkii_1	Eyestalk	1	1
		Eyestalk, brain, hemocytes, gills,		
		testis, ovary, hepatopancreas,		
		heart, green gland,		
		ventralganglia, Y-organ,		
Decapoda	Procambarus clarkii_2	hypodermis, muscle	1	1
Decapoda	Scylla olivacea	Na	1	
Decapoda	Scylla paramamosain	gill	0	0
Euphausiacea	Euphausia superba	NA	1	1
Euphausiacea	Meganyctiphanes norvegica	adult	0	0
Isopoda	Asellus aquaticus	NA	0	0
Isopoda	Bragasellus molinai	whole organism	0	0
Isopoda	Bragasellus peltatus	whole organism	2	2
Isopoda	Proasellus aragonensis	whole organism	1	1
Isopoda	Proasellus arthrodilus	whole organism	1	1
Isopoda	Proasellus assaforensis	whole organism	1	1
Isopoda	Proasellus beticus	whole organism	1	1
Isopoda	Proasellus cantabricus	whole organism	1	1
Isopoda	Proasellus cavaticus	whole organism	1	1

Isopoda	Proasellus coiffaiti	whole organism	1	1
Isopoda	Proasellus coxalis	whole organism	1	1
Isopoda	Proasellus ebrensis	whole organism	1	1
Isopoda	Proasellus escolai	whole organism	1	1
Isopoda	Proasellus grafi	whole organism	1	1
Isopoda	Proasellus granadensis	whole organism	1	1
Isopoda	Proasellus hercegovinensis	whole organism	1	1
Isopoda	Proasellus ibericus	whole organism	1	1
Isopoda	Proasellus jaloniacus	whole organism	1	1
Isopoda	Proasellus karamani	whole organism	1	1
Isopoda	Proasellus margalefi	whole organism	1	1
Isopoda	Proasellus meridianus	whole organism	1	1
Isopoda	Proasellus ortizi	whole organism	1	1
Isopoda	Proasellus parvulus	whole organism	1	1
Isopoda	Proasellus racovitzai	whole organism	1	1
Isopoda	Proasellus rectus	whole organism	1	1
Isopoda	Proasellus solanasi	whole organism	1	1
Isopoda	Proasellus spelaeus	whole organism	1	1
Mysida	Neomysis awatschensis	whole organism	0	0
Total malacostracan genes				45

Additional file 4G. Spätzle.

Arthropoda

Class (subphylum)	Species	Tissue type	Total gene counts	References
Insecta	Drosophila melanogaster	whole organism	6	Palmer et al., 2015
Insecta	Anopheles gambiae	whole organism	5	ImmunoDB
Insecta	Aedes aegypti	whole organism	6	ImmunoDB
Chilopoda (Myriapoda)	Strigamia maritima	whole organism	2	Palmer et al., 2015
Arachnida (Chelicerata)	Mesobuthus martensii	whole organism	5	Palmer et al., 2015
Arachnida (Chelicerata)	Ixodes scapularis	whole organism	2	Palmer et al., 2015
Branchiopoda (Crustacea)	Daphnia pulex	whole organism	4	Palmer et al., 2015

Malacostraca

Order	Species/Datasets	Tissue type	Total gene counts	Total number of non-redundant genes per species
Amphipoda	Echinogammarus veneris	NA	0	0
Amphipoda	Gammarus chevreuxi	NA	3	3
Amphipoda	Gammarus pulex	NA	0	0
Amphipoda	Hyalella azteca_1	NA	0	
Amphipoda	Hyalella azteca_2	NA	0	
Amphipoda	Hyalella azteca_3	whole organism	3	3
Amphipoda	Melita plumulosa	whole organism	3	3
Amphipoda	Parhyale hawaiiensis	whole organism	7	7
Amphipoda	Talitrus saltator	brain	2	2
		hepatopancreas, ovaries, green		
Decapoda	Astacus astacus	glands, abdominal musculature	0	0
Decapoda	Astacus leptodactylus_1	hypodermis; Y organ	3	
Decapoda	Astacus leptodactylus_2	hepatopancreas	2	
		hypodermis, Y organ,		
		hepatopancreas, gills,		
Decapoda	Astacus leptodactylus_3	hematocytes, muscle	4	6
Decapoda	Callinectes sapidus	gill 7	1	1
Decapoda	Cancer borealis	nervous system	4	4
Decapoda	Carcinus maenas	NA	4	4
Decapoda	Cherax quadricarinatus_1	hypodermis and gastrolith disc	3	
Decapoda	Cherax quadricarinatus_2	heart, kidney, liver, nerve, testis	3	
Decapoda	Cherax quadricarinatus_3	heart, kidney, liver, nerve, testis	3	3
Decapoda	Eriocheir sinensis_1	NA	6	
		eyestalk, Y-organ, and		
Decapoda	Eriocheir sinensis_2	hepatopancreas	0	
Decapoda	Eriocheir sinensis_3	hepatopancreas	0	6
Decapoda	Farfantepenaeus aztecus	hepatopancreas	2	2
Decapoda	Homarus americanus	nervous system	2	2
Decapoda	Hyas araneus_1	adult	1	
Decapoda	Hyas araneus_2	gill	1	1
Decapoda	Litopenaeus vannamei_1	Ghaffari et al., 2014	3	
Decapoda	Litopenaeus vannamei_2	hepatopancreas	0	
Decapoda	Litopenaeus vannamei_3	hepatopancreas	0	
Decapoda	Litopenaeus vannamei_4	hemocytes	0	3
Decapoda	Macrobrachium nipponense	NA	0	0
		Brain, HPT, Hemocyte,		
Decapoda	Pacifastacus leniusculus	Hepatopancreas	0	0
Decapoda	Palaemon argentinus	whole organism	0	0
Decapoda	Penaeus monodon_1	hepatopancreas	0	
Decapoda	Penaeus monodon_2	hepatopancreas	0	0
Decapoda	Procambarus clarkii_1	Eyestalk	3	
		Eyestalk, brain, hemocytes, gills,		
		testis, ovary, hepatopancreas,		
		heart, green gland,		
		ventralganglia, Y-organ,		
Decapoda	Procambarus clarkii_2	hypodermis, muscle	3	3
Decapoda	Scylla olivacea	Na	2	2
Decapoda	Scylla paramamosain	gill	4	4
Euphausiacea	Euphausia superba	NA	26	26
Euphausiacea	Meganyctiphanes norvegica	adult	5	5
Isopoda	Asellus aquaticus	NA	1	1
Isopoda	Bragasellus molinai	whole organism	1	1
Isopoda	Bragasellus peltatus	whole organism	2	2
Isopoda	Proasellus aragonensis	whole organism	5	5
Isopoda	Proasellus arthrodilus	whole organism	1	1
Isopoda	Proasellus assaforensis	whole organism	1	1
Isopoda	Proasellus beticus	whole organism	0	0
Isopoda	Proasellus cantabricus	whole organism	2	2
Isopoda	Proasellus cavaticus	whole organism	3	3

Isopoda	Proasellus coiffaiti	whole organism	3	3
Isopoda	Proasellus coxalis	whole organism	5	5
Isopoda	Proasellus ebreus	whole organism	4	4
Isopoda	Proasellus escolai	whole organism	1	1
Isopoda	Proasellus grafi	whole organism	2	2
Isopoda	Proasellus granadensis	whole organism	3	3
Isopoda	Proasellus hercegovinensis	whole organism	3	3
Isopoda	Proasellus ibericus	whole organism	1	1
Isopoda	Proasellus jaloniacus	whole organism	5	5
Isopoda	Proasellus karamani	whole organism	5	5
Isopoda	Proasellus margalefi	whole organism	2	2
Isopoda	Proasellus meridianus	whole organism	5	5
Isopoda	Proasellus ortizi	whole organism	3	3
Isopoda	Proasellus parvulus	whole organism	3	3
Isopoda	Proasellus racovitzae	whole organism	5	5
Isopoda	Proasellus rectus	whole organism	4	4
Isopoda	Proasellus solanasi	whole organism	7	7
Isopoda	Proasellus spelaeus	whole organism	5	5
Mysida	Neomysis awatschensis	whole organism	7	7
Total malacostracan genes				179

Additional file 4H. Tollip.

Arthropoda

Class (subphylum)	Species	Tissue type	Total gene counts	References
Insecta	Drosophila melanogaster	whole organism	0	proteome
Insecta	Anopheles gambiae	whole organism	1	proteome
Insecta	Aedes aegypti	whole organism	0	proteome
Chilopoda (Myriapoda)	Strigamia maritima	whole organism	1	proteome
Arachnida (Chelicerata)	Mesobuthus martensii	whole organism	1	proteome
Arachnida (Chelicerata)	Ixodes scapularis	whole organism	1	proteome
Branchiopoda (Crustacea)	Daphnia pulex	whole organism	1	proteome

Malacostraca

Order	Species/Datasets	Tissue type	Total gene counts	Total number of non-redundant genes per species
Amphipoda	Echinogammarus veneris	NA	0	0
Amphipoda	Gammarus chevreuxi	NA	1	1
Amphipoda	Gammarus pulex	NA	1	1
Amphipoda	Hyaella azteca_1	NA	0	0
Amphipoda	Hyaella azteca_2	NA	0	0
Amphipoda	Hyaella azteca_3	whole organism	0	0
Amphipoda	Melita plumulosa	whole organism	0	0
Amphipoda	Parhyale hawaiiensis	whole organism	1	1
Amphipoda	Talitrus saltator	brain	1	1
		hepatopancreas, ovaries, green		
Decapoda	Astacus astacus	glands, abdominal musculature	1	1
Decapoda	Astacus leptodactylus_1	hypodermis; Y organ	1	
Decapoda	Astacus leptodactylus_2	hepatopancreas	1	
		hypodermis, Y organ,		
		hepatopancreas, gills, hemocytes,		
Decapoda	Astacus leptodactylus_3	muscle	1	1
Decapoda	Callinectes sapidus	gill 7	0	0
Decapoda	Cancer borealis	nervous system	1	1
Decapoda	Carcinus maenas	NA	1	1
Decapoda	Cherax quadricarinatus_1	hypodermis and gastrolith disc	1	
Decapoda	Cherax quadricarinatus_2	heart, kidney, liver, nerve, testis	1	
Decapoda	Cherax quadricarinatus_3	heart, kidney, liver, nerve, testis	1	1
Decapoda	Eriocheir sinensis_1	NA	1	
		eyestalk, Y-organ, and		
Decapoda	Eriocheir sinensis_2	hepatopancreas	1	
Decapoda	Eriocheir sinensis_3	hepatopancreas	1	1
Decapoda	Farfantepenaeus aztecus	hepatopancreas	1	1
Decapoda	Homarus americanus	nervous system	1	1
Decapoda	Hyas araneus_1	adult	1	
Decapoda	Hyas araneus_2	gill	2	2
Decapoda	Litopenaeus vannamei_1	Ghaffari et al., 2014	1	
Decapoda	Litopenaeus vannamei_2	hepatopancreas	1	
Decapoda	Litopenaeus vannamei_3	hepatopancreas	1	
Decapoda	Litopenaeus vannamei_4	hemocytes	1	1
Decapoda	Macrobrachium nipponense	NA	1	1
		Brain, HPT, Hemocyte,		
Decapoda	Pacifastacus leniusculus	Hepatopancreas	1	1
Decapoda	Palaemon argentinus	whole organism	1	1
Decapoda	Penaeus monodon_1	hepatopancreas	1	
Decapoda	Penaeus monodon_2	hepatopancreas	1	1
Decapoda	Procambarus clarkii_1	Eyestalk	1	
		Eyestalk, brain, hemocytes, gills,		
		testis, ovary, hepatopancreas, heart,		
		green gland, ventral ganglia, Y-organ,		
Decapoda	Procambarus clarkii_2	hypodermis, muscle	1	1
Decapoda	Scylla olivacea	Na	1	1
Decapoda	Scylla paramamosain	gill	0	0
Euphausiacea	Euphausia superba	NA	1	1
Euphausiacea	Meganyctiphanes norvegica	adult	0	0
Isopoda	Asellus aquaticus	NA	0	0
Isopoda	Bragasellus molinai	whole organism	1	1
Isopoda	Bragasellus peltatus	whole organism	1	1
Isopoda	Proasellus aragonensis	whole organism	1	1
Isopoda	Proasellus arthrodilus	whole organism	1	1
Isopoda	Proasellus assaforensis	whole organism	1	1
Isopoda	Proasellus beticus	whole organism	0	0
Isopoda	Proasellus cantabricus	whole organism	1	1
Isopoda	Proasellus cavaticus	whole organism	1	1
Isopoda	Proasellus coiffaiti	whole organism	1	1
Isopoda	Proasellus coxalis	whole organism	1	1
Isopoda	Proasellus ebreensis	whole organism	1	1

Isopoda	Proasellus escolai	whole organism	1	1
Isopoda	Proasellus grafi	whole organism	1	1
Isopoda	Proasellus granadensis	whole organism	0	0
Isopoda	Proasellus hercegovinensis	whole organism	1	1
Isopoda	Proasellus ibericus	whole organism	1	1
Isopoda	Proasellus jaloniacus	whole organism	1	1
Isopoda	Proasellus karamani	whole organism	2	2
Isopoda	Proasellus margalefi	whole organism	0	0
Isopoda	Proasellus meridianus	whole organism	1	1
Isopoda	Proasellus ortizi	whole organism	1	1
Isopoda	Proasellus parvulus	whole organism	1	1
Isopoda	Proasellus racovitzai	whole organism	1	1
Isopoda	Proasellus rectus	whole organism	1	1
Isopoda	Proasellus solanasi	whole organism	1	1
Isopoda	Proasellus spelaeus	whole organism	1	1
Mysida	Neomysis awatschensis	whole organism	1	1
Total malacostracan genes				47