

Table S1. Gene specific Primers used for qRT-PCR analysis.

Gene ID	Gene name	Forward/reverse	Primer sequence (5'-3')
c89459.graph_c0	Mitogen-activated protein kinase kinase kinase 4	F	GATGATCCGGTCGAAGTGT
		R	CGGAAGGAGAGGTTAGTCGT G
c92066.graph_c0	Integrin beta pat-3-like	F	GTCCAGGACAATTGCAGGAT
		R	CGTGGCTGTCTTGTCTTTCA
c90624.graph_c0	GGBP	F	TCGGTCGGCTCAGAGACTAT
		R	GATACGTGGTGACTGCAGGA
c91406.graph_c2	Suppressor of cytokine signaling 2-like isoform X2	F	AAAGGAGTCGGGTGTGTTTG
		R	CGGCAGCTTTTTGTAACGAT
c93759.graph_c1	Peptidoglycan recognition protein-like protein	F	CGCCATCTTGGTTACGTTTT
		R	CGGCAGCCATTTTGTATCA
c93774.graph_c0	Cactus	F	GACGTGAAGCTGGTGCAGTA
		R	AGAGGCTTTCGCTTTCACTG
c77163.graph_c1	Spaetzle	F	TGTACCGTGAAACCACCAGA
		R	GGCGGACCTTTTGAATGTAA
c85165.graph_c0	Cytochrome P450	F	GTTGGCCGTCGACAATAAAT
		R	GGCTTGTATTCGGGAGATCA
c89772.graph_c1	Serine protease inhibitor 13 precursor	F	CGCTAAAAGCACACGCTACA
		R	GGCTTCTGGTAACGTGCATT
c85340.graph_c0	Hemolymph proteinase 9	F	ATCTGGTTCGTCGATTACGG
		R	TATAGAGGCGCTGGAGCAGT
	Ap18s rRNA	F	CGATCCGCCGACGTTACTAC A
		R	GTCCGGGCGCTGGTGAGATT
	DNMT1	F	ACGACTACGCCGTTGGTAAG
		R	TCATCAGCTTGTTCACAGC
	DNMT2	F	TGTGCATGGAATGAATCAGG
		R	CGGATCATTTCATCGAGGT

Table S2. Summary Statistics of the *A. pernyi* Transcriptome Annotation.

Annotated databases	Annotated number	Percentage %	300 ≤ length < 1000	length ≥ 1000
COG_Annotation	8187	29.92	4222	3965
GO_Annotation	12562	45.91	6934	5628
KEGG_Annotation	13351	48.79	7523	5828
KOG_Annotation	17920	65.49	10046	7874
Pfam_Annotation	19325	70.62	10409	8916
Swissprot_Annotation	14013	51.21	7045	6968
eggNOG_Annotation	25402	92.84	15144	10258
nr_Annotation	23492	85.85	12893	10599
All_Annotated	27361	100	16565	10796

Table S3. Table of GO Enrichment of All Genes and DEGs.

Term Type	Subcategories	All Genes	DEGs
Biological Process	Cellular process	6469	126
	Metabolic process	6261	137
	Single-organism process	4371	122
	Biological regulation	1828	33
	Localization	1566	53

Response to stimulus	1142	30
Cellular component organization or biogenesis	1099	8
Signaling	770	13
Multicellular organismal process	307	4
Developmental process	304	2
Multi-organism process	96	8
Reproduction	88	0
Biological adhesion	84	1
Reproductive process	74	0
Locomotion	69	0
Immune system process	62	9
Growth	29	0
Behavior	26	0
Rhythmic process	3	0
Cell killing	1	1
Cellular Component		
Cell	4692	67
Cell part	4634	65
Membrane	3476	118
Organelle	3079	38
Membrane part	2571	101
Macromolecular complex	2118	22
Organelle part	1699	24
Membrane-enclosed lumen	354	4
Extracellular region	206	17
Extracellular region part	87	8
Virion	64	0
Virion part	64	0
Synapse	40	0
Synapse part	35	0
Cell junction	32	1
Molecular Function		
Catalytic activity	6031	155
Binding	5788	120
Transporter activity	730	31
Structural molecule activity	676	5
Molecular transducer activity	225	7
Signal transducer activity	225	7
Nucleic acid binding transcription factor activity	137	5
Electron carrier activity	132	3
Antioxidant activity	57	1
Transcription factor activity, protein binding	46	1
Protein tag	11	0
Metallochaperone activity	4	0
Nutrient reservoir activity	3	2
Chemoattractant activity	2	0
Molecular function regulator	1	0

Table S4. Classification of the Unigenes Annotated in KOG.

Class Name	Abbreviations	Numbers	Percentage
Translation, ribosomal structure and biogenesis	J	13	6.10
RNA processing and modification	A	1	0.47
Transcription	K	2	0.94
Replication, recombination and repair	L	3	1.41

Chromatin structure and dynamics	B	0	0
Cell cycle control, cell division, chromosome partitioning	D	0	0
Nuclear structure	Y	0	0
Defense mechanisms	V	10	4.70
Signal transduction mechanisms	T	13	6.10
Cell wall/membrane/envelope biogenesis	M	8	3.76
Cell motility	N	0	0
Cytoskeleton	Z	0	0
Extracellular structures	W	0	0
Intracellular trafficking, secretion, and vesicular transport	U	3	1.41
Posttranslational modification, protein turnover, chaperones	O	29	13.6
Energy production and conversion	C	14	6.57
Carbohydrate transport and metabolism	G	26	12.21
Amino acid transport and metabolism	E	11	5.16
Nucleotide transport and metabolism	F	5	2.35
Coenzyme transport and metabolism	H	7	3.29
Lipid transport and metabolism	I	16	7.51
Inorganic ion transport and metabolism	P	9	4.23
Secondary metabolites biosynthesis, transport and catabolism	Q	13	6.10
General function prediction only	R	23	10.80
Function unknown	S	3	1.41
Mobilome: prophages, transposons	X	4	1.88

Footnote: Functional classification of unigenes are classified from A-Z