

Figure S1. Results of GO enrichment analysis.

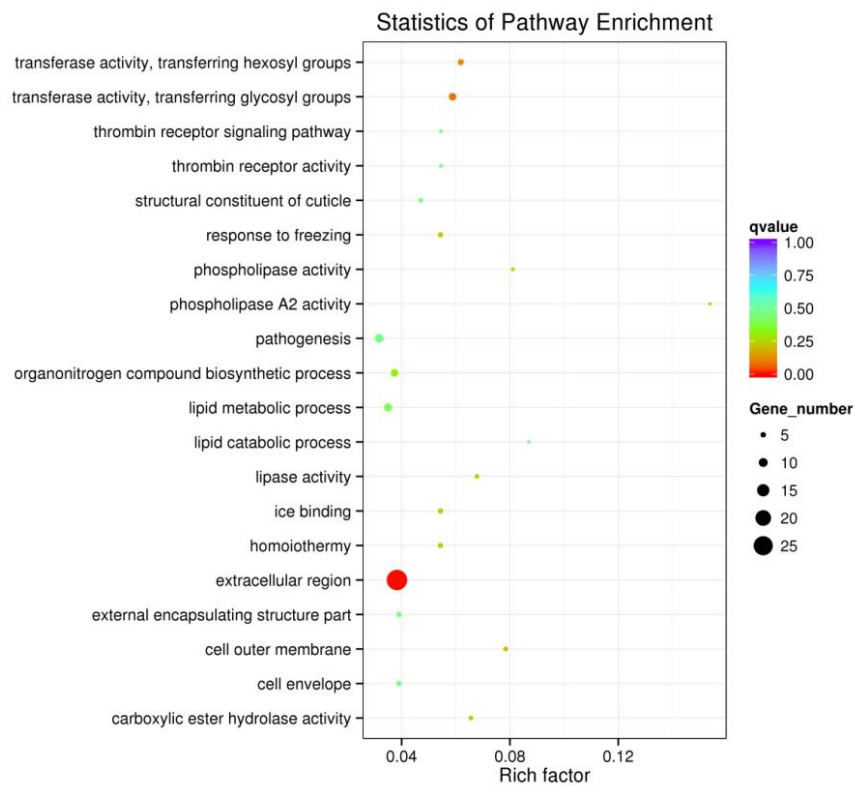


Figure S2. Results of KEGG analysis.

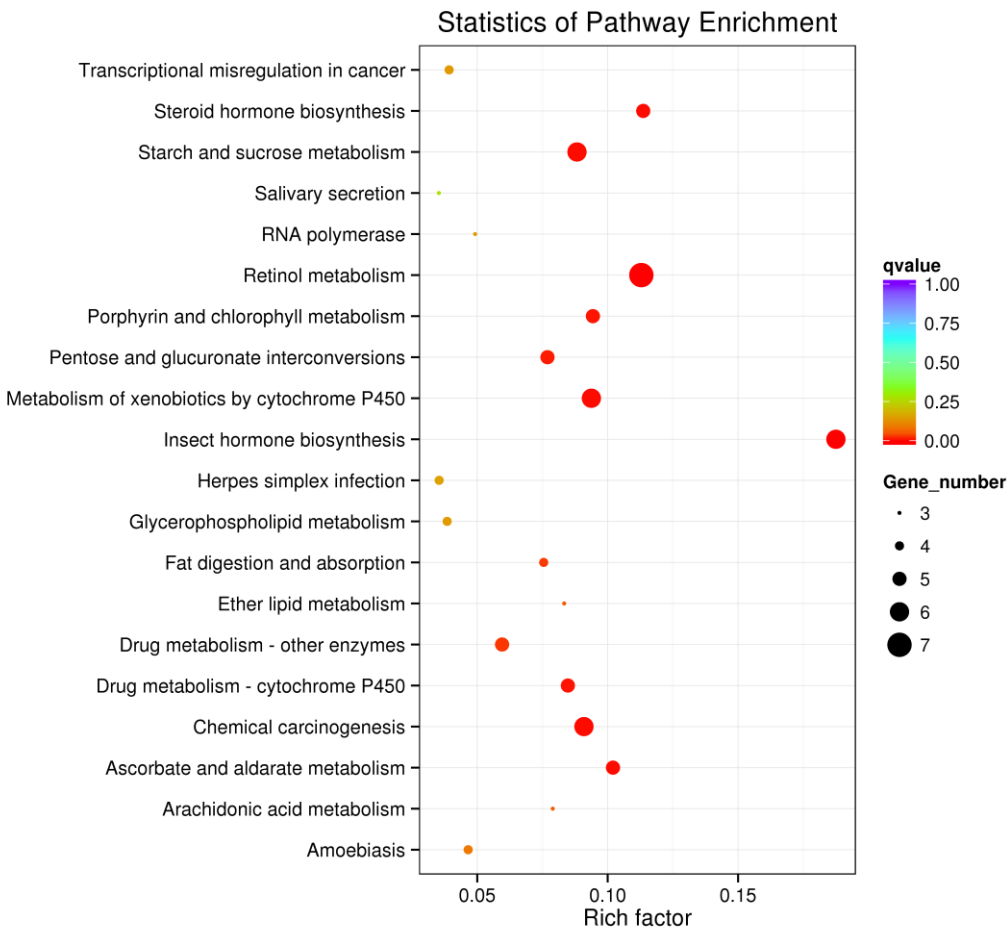


Table S1. Genes included in GO enrichment results.

GO_Term	GO_Class	P value	Genes
extracellular region	CC	9.65E-06	<p><i>low molecular mass 30 kDa lipoprotein 21G1-like [Bombyx mori]</i>,<i>low molecular mass 30 kDa lipoprotein 19G1-like [Bombyx mori]</i>, <i>low molecular mass 30 kDa lipoprotein 19G1-like [Bombyx mori]</i>, <i>alcohol dehydrogenase precursor [Bombyx mori]</i>, <i>uncharacterized protein LOC101745266 [Bombyx mori]</i>,<i>uncharacterized protein LOC101740086 [Bombyx mori]</i>,<i>uncharacterized protein LOC101739948 [Bombyx mori]</i>,<i>serine protease inhibitor 21 isoform X3 [Bombyx mori]</i>,<i>phospholipase A2-like [Bombyx mori]</i>,<i>microvitellogenin-like [Bombyx mori]</i>,<i>cuticular protein RR-2 motif 58 precursor [Bombyx mori]</i>,<i>seroin 1 precursor [Bombyx mori]</i>,<i>uncharacterized protein LOC101742341 [Bombyx mori]</i>,<i>RNA exonuclease 4-like [Bombyx mori]</i>,<i>uncharacterized protein LOC101746057 [Bombyx mori]</i>,<i>uncharacterized protein LOC101736844 [Bombyx mori]</i>,<i>actin cytoskeleton-regulatory complex protein PAN1 [Bombyx mori]</i>,<i>microvitellogenin-like [Bombyx mori]</i>,<i>low molecular 30 kDa lipoprotein PBMHP-12-like [Bombyx mori]</i>,<i>low molecular mass 30 kDa lipoprotein 19G1-like precursor [Bombyx mori]</i>,<i>low molecular 30 kDa lipoprotein PBMHPC-19-like precursor [Bombyx mori]</i>,<i>plasma kallikrein-like [Bombyx mori]</i>,<i>uncharacterized protein LOC101743393 [Bombyx mori]</i>,<i>uncharacterized protein LOC105843019 [Bombyx mori]</i>,<i>uncharacterized protein LOC101742472 [Bombyx mori]</i>,<i>spherulin-2A-like [Bombyx mori]</i>,<i>Low calcium response V antigen [Bombyx mori]</i></p>
transferase activity, transferring glycosyl groups	MF	0.0020812	<p><i>UDP-glycosyltransferase UGT33R1 precursor [Bombyx mori]</i>,<i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i>,<i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i>,<i>UDP-glucosyltransferase precursor 46 [Bombyx mori]</i>,<i>UDP-glycosyltransferase UGT46A1 [Bombyx mori]</i>,<i>phospholipase A2-like isoform X1 [Bombyx mori]</i>,<i>cuticular protein glycine-rich 26 precursor [Bombyx mori]</i>,<i>beta-1,4-galactosyltransferase 7-like [Bombyx mori]</i></p>
transferase activity, transferring hexosyl groups	MF	0.0058270	<p><i>UDP-glycosyltransferase UGT33R1 precursor [Bombyx mori]</i>,<i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i>,<i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i>,<i>UDP-glucosyltransferase precursor 85 precursor [Bombyx mori]</i>,<i>UDP-glucosyltransferase precursor [Bombyx mori]</i>,<i>UDP-glycosyltransferase UGT46A1 [Bombyx mori]</i>,<i>phospholipase A2-like isoform X1 [Bombyx mori]</i></p>

cell outer membrane	CC	0.010454439	uncharacterized protein LOC101742377 [Bombyx mori],sericin 2 isoform 1 precursor [Bombyx mori],uncharacterized protein LOC101737731 [Bombyx mori],glow molecular mass 30 kDa lipoprotein 19G1-like precursor [Bombyx mori]
			lipase member H-A-like [Bombyx mori],phospholipase
lipase activity	MF	0.0171714	A2-like [Bombyx mori],phospholipase A2-like isoform X1 93 [Bombyx mori],pancreatic triacylglycerol lipase-like [Bombyx mori]
carboxylic ester hydrolase activity	MF	0.0191887	lipase member H-A-like [Bombyx mori],phospholipase A2-like [Bombyx mori],phospholipase A2-like isoform X1 04 [Bombyx mori],pancreatic triacylglycerol lipase-like [Bombyx mori]
homoiothermy	BP	0.0193274	antifreeze protein[Bombyx mori],angiomotin-like [Bombyx mori],vitelline membrane protein Vm26Ab-like [Bombyx mori],ice-structuring glycoprotein-like [Bombyx mori],calpain-B [Bombyx mori]
ice binding	MF	0.0193274	antifreeze protein[Bombyx mori],angiomotin-like [Bombyx mori],vitelline membrane protein Vm26Ab-like [Bombyx mori],ice-structuring glycoprotein-like [Bombyx mori],calpain-B [Bombyx mori]
response to freezing	BP	0.0193274	antifreeze protein[Bombyx mori],angiomotin-like [Bombyx mori],vitelline membrane protein Vm26Ab-like [Bombyx mori],ice-structuring glycoprotein-like [Bombyx mori],calpain-B [Bombyx mori]
phospholipase A2 activity	MF	0.0194101	phospholipase A2-like [Bombyx mori],phospholipase A2-like isoform X1 [Bombyx mori]
phospholipase activity	MF	0.023901444	lipase member H-A-like [Bombyx mori],phospholipase A2-like [Bombyx mori],phospholipase A2-like isoform X1 [Bombyx mori]
tachykinin receptor signaling pathway	BP	0.0255613	uncharacterized protein LOC101737931 [Bombyx mori],cuticle protein 6.4 [Bombyx mori]
organonitrogen compound biosynthetic process	BP	0.02817645	15-hydroxyprostaglandin dehydrogenase [NAD(+)]-like [Bombyx mori],collagenase-like [Bombyx mori],uncharacterized protein LOC105842596 [Bombyx mori],uncharacterized protein LOC105841445 [Bombyx mori],TPA: putative cuticle protein [Bombyx mori],uncharacterized protein LOC101747020 [Bombyx mori],putative cuticle protein CPH45 precursor [Bombyx mori], uncharacterized protein LOC101744973 [Bombyx mori]
acid	MF	0.0288945	prostatic acid phosphatase-like [Bombyx mori],multiple

phosphatase activity			76 inositol polyphosphate phosphatase 1-like [Bombyx mori]
interleukin-6 receptor binding	MF	0.0333337 43	alcohol dehydrogenase precursor [Bombyx mori]
lactose synthase activity	MF	0.0333337 43	phospholipase A2-like isoform X1 [Bombyx mori]
lactose biosynthetic process	BP	0.0333337 43	phospholipase A2-like isoform X1 [Bombyx mori]
ferrous iron binding	MF	0.0333337 43	extradiol ring-cleavage dioxygenase-like [Bombyx mori]
lipid metabolic process	BP	0.0419104 97	lipase 1-like [Bombyx mori], lipase 1-like [Bombyx mori], lipase member H-A-like [Bombyx mori], lipase member H-A-like [Bombyx mori], lipase member H-A-like [Bombyx mori], phospholipase A2-like [Bombyx mori], short-chain dehydrogenase/reductase-like protein [Danaus plexippus], phospholipase A2-like isoform X1 [Bombyx mori], pancreatic triacylglycerol lipase-like [Bombyx mori], cuticular protein RR-2 motif 60 precursor [Bombyx mori], cuticular protein RR-2 motif 58 precursor [Bombyx mori], cuticular protein RR-1 motif 9 precursor [Bombyx mori], cuticular protein RR-2 motif 124 precursor [Bombyx mori]
structural constituent of cuticle	MF	0.0548029 39	phospholipase A2-like [Bombyx mori], phospholipase A2-like 67 isoform X1 [Bombyx mori]
lipid catabolic process	BP	0.0564455	uncharacterized protein LOC101740086 [Bombyx mori], evm.model.Bomo_Chr11.201, phospholipase A2-like [Bombyx mori], uncharacterized protein LOC101742341 [Bombyx mori], RNA exonuclease 4-like [Bombyx mori], uncharacterized protein LOC101746057 [Bombyx mori], low molecular 30 kDa lipoprotein PBMHPC-19-like precursor [Bombyx mori], uncharacterized protein LOC105843019 [Bombyx mori], uncharacterized protein LOC101742472 [Bombyx mori], Low calcium response V antigen [Bombyx mori]
pathogenesis	BP	0.0617449	alaserpin-like [Bombyx mori], uncharacterized protein LOC101742377 [Bombyx mori], sericin 2 isoform 1 precursor [Bombyx mori], uncharacterized protein LOC101737731 [Bombyx mori], glow molecular mass 30 kDa lipoprotein 19G1-like precursor [Bombyx mori]
cell envelope	CC	0.0646808 39	alaserpin-like [Bombyx mori], uncharacterized protein 39 LOC101742377 [Bombyx mori], sericin 2 isoform 1 precursor
external encapsulating	CC	0.0646808	

structure part			<i>[Bombyx mori],uncharacterized protein LOC101737731</i> <i>[Bombyx mori],glow molecular mass 30 kDa lipoprotein</i> <i>19G1-like precursor [Bombyx mori]</i>
thrombin receptor activity	MF	0.0649584	<i>uncharacterized protein LOC105842978 [Bombyx</i> <i>mori],putative uncharacterized protein DDB_G0282133</i> <i>[Bombyx mori],uncharacterized protein LOC101743399</i> <i>[Bombyx mori]</i>
thrombin receptor signaling pathway	BP	0.0649584	<i>uncharacterized protein LOC105842978 [Bombyx</i> <i>mori],putative uncharacterized protein DDB_G0282133</i> <i>[Bombyx mori],uncharacterized protein LOC101743399</i> <i>[Bombyx mori]</i>
adenosine kinase activity	MF	0.0655616 92	<i>collagenase-like [Bombyx mori]</i>
purine ribonucleoside salvage	BP	0.0655616 92	<i>collagenase-like [Bombyx mori]</i>
DNA transport	BP	0.0655616 92	<i>uncharacterized protein LOC101739948 [Bombyx mori]</i>
pericentriolar material	CC	0.0655616 92	<i>calexيتين-2-like [Bombyx mori]</i>
cell volume homeostasis	BP	0.0655616 92	<i>uncharacterized protein LOC101744296 [Bombyx mori]</i>

Table S2. Genes included in KEGG analysis results.

Map Title	P value	Genes
Insect hormone biosynthesis	9.52E-07	<i>calexcitin-2-like [Bombyx mori]</i> , <i>uncharacterized protein LOC101742377 [Bombyx mori]</i> , <i>uncharacterized protein LOC101745533 [Bombyx mori]</i> , <i>uncharacterized protein LOC101743036 [Bombyx mori]</i> , <i>farnesol dehydrogenase-like isoform X1 [Bombyx mori]</i> , <i>uncharacterized protein LOC101738236 [Bombyx mori]</i> <i>UDP-glycosyltransferase UGT33R1 precursor [Bombyx mori]</i> <i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i>
Retinol metabolism	3.96E-06	<i>UDP-glucosyltransferase precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT46A1 [Bombyx mori]</i> , <i>17-beta-hydroxysteroid dehydrogenase 14-like [Bombyx mori]</i> , <i>17-beta-hydroxysteroid dehydrogenase 14-like [Bombyx mori]</i> <i>UDP-glycosyltransferase UGT33R1 precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i> , <i>UDP-glucosyltransferase precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT46A1 [Bombyx mori]</i> , <i>carbonyl reductase [NADPH] 3-like [Bombyx mori]</i> <i>UDP-glycosyltransferase UGT33R1 precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i> , <i>UDP-glucosyltransferase precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT46A1 [Bombyx mori]</i> , <i>carbonyl reductase [NADPH] 3-like [Bombyx mori]</i> <i>UDP-glycosyltransferase UGT33R1 precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i>
Metabolism of xenobiotics by cytochrome P450	6.01E-05	<i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i> , <i>UDP-glucosyltransferase precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT46A1 [Bombyx mori]</i> , <i>carbonyl reductase [NADPH] 3-like [Bombyx mori]</i> <i>UDP-glycosyltransferase UGT33R1 precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i> , <i>UDP-glucosyltransferase precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT46A1 [Bombyx mori]</i> , <i>carbonyl reductase [NADPH] 3-like [Bombyx mori]</i> <i>UDP-glycosyltransferase UGT33R1 precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i>
Chemical carcinogenesis	7.16E-05	<i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i> , <i>UDP-glucosyltransferase precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT46A1 [Bombyx mori]</i> , <i>carbonyl reductase [NADPH] 3-like [Bombyx mori]</i> <i>UDP-glycosyltransferase UGT33R1 precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i>
Starch and sucrose metabolism	8.49E-05	<i>mori]</i> , <i>UDP-glycosyltransferase UGT33R2 precursor [Bombyx mori]</i> , <i>TPA: putative cuticle protein [Bombyx mori]</i> , <i>UDP-glucosyltransferase precursor [Bombyx mori]</i> , <i>UDP-glycosyltransferase UGT46A1 [Bombyx mori]</i>
Steroid hormone	0.0001026	<i>UDP-glycosyltransferase UGT33R1 precursor</i>

biosynthesis	13	[<i>Bombyx mori</i>], UDP-glycosyltransferase UGT33R2 precursor [<i>Bombyx mori</i>], UDP-glycosyltransferase UGT33R2 precursor [<i>Bombyx mori</i>], UDP-glucosyltransferase precursor [<i>Bombyx mori</i>], UDP-glycosyltransferase UGT46A1 [<i>Bombyx mori</i>] UDP-glycosyltransferase UGT33R1 precursor [<i>Bombyx mori</i>], UDP-glycosyltransferase UGT33R2 precursor [<i>Bombyx mori</i>],
Ascorbate and aldarate metabolism	0.0001728 21	UDP-glycosyltransferase UGT33R2 precursor [<i>Bombyx mori</i>], UDP-glucosyltransferase precursor [<i>Bombyx mori</i>], UDP-glycosyltransferase UGT46A1 [<i>Bombyx mori</i>] UDP-glycosyltransferase UGT33R1 precursor [<i>Bombyx mori</i>], UDP-glycosyltransferase UGT33R2 precursor [<i>Bombyx mori</i>],
Porphyrin and chlorophyll metabolism	0.0002515 56	[<i>Bombyx mori</i>], UDP-glycosyltransferase UGT33R2 precursor [<i>Bombyx mori</i>], UDP-glucosyltransferase precursor [<i>Bombyx mori</i>], UDP-glycosyltransferase UGT46A1 [<i>Bombyx mori</i>] UDP-glycosyltransferase UGT33R1 precursor [<i>Bombyx mori</i>], UDP-glycosyltransferase UGT33R2 precursor [<i>Bombyx mori</i>],
Drug metabolism - cytochrome P450	0.0004174 74	[<i>Bombyx mori</i>], UDP-glycosyltransferase UGT33R2 precursor [<i>Bombyx mori</i>], UDP-glucosyltransferase precursor [<i>Bombyx mori</i>], UDP-glycosyltransferase UGT46A1 [<i>Bombyx mori</i>] UDP-glycosyltransferase UGT33R1 precursor [<i>Bombyx mori</i>], UDP-glycosyltransferase UGT33R2 precursor [<i>Bombyx mori</i>],
Pentose and glucuronate interconversions	0.0006552 38	[<i>Bombyx mori</i>], UDP-glycosyltransferase UGT33R2 precursor [<i>Bombyx mori</i>], UDP-glucosyltransferase precursor [<i>Bombyx mori</i>], UDP-glycosyltransferase UGT46A1 [<i>Bombyx mori</i>] UDP-glycosyltransferase UGT33R1 precursor [<i>Bombyx mori</i>], UDP-glycosyltransferase UGT33R2 precursor [<i>Bombyx mori</i>],
Drug metabolism - other enzymes	0.0020913 95	[<i>Bombyx mori</i>], UDP-glycosyltransferase UGT33R2 precursor [<i>Bombyx mori</i>], UDP-glucosyltransferase precursor [<i>Bombyx mori</i>], UDP-glycosyltransferase UGT46A1 [<i>Bombyx mori</i>] phospholipase A2-like [<i>Bombyx mori</i>],
Fat digestion and absorption	0.0025253 54	1-acyl-sn-glycerol-3-phosphate acyltransferase alpha-like [<i>Bombyx mori</i>]

		<i>mori</i>] ,scavenger receptor class B member 1 like protein 15 [<i>Bombyx mori</i>], phospholipase A2-like isoform X1 [<i>Bombyx mori</i>]
Tropane, piperidine and pyridine alkaloid biosynthesis	0.003151203	<i>short-chain dehydrogenase/reductase-like protein [Danaus plexippus]</i> ,dehydrogenase/reductase SDR family member 2, mitochondrial-like [<i>Bombyx mori</i>] phospholipase A2-like [<i>Bombyx mori</i>] ,rRNA
Ether lipid metabolism	0.0068498	2'-O-methyltransferase fibrillar-like [<i>Bombyx mori</i>], phospholipase A2-like isoform X1 [<i>Bombyx mori</i>] phospholipase A2-like [<i>Bombyx mori</i>] ,phospholipase A2-like isoform X1 [<i>Bombyx mori</i>] ,carbonyl reductase [NADPH] 3-like [<i>Bombyx mori</i>]
Arachidonic acid metabolism	0.0079694	serine protease inhibitor 21 isoform X3 [<i>Bombyx mori</i>], alaserpin-like [<i>Bombyx mori</i>] SCO-spondin [<i>Bombyx mori</i>], retrotransposon gag domain-containing protein 1-like [<i>Ficedula albicollis</i>]
Amoebiasis	0.014034042	
Linoleic acid metabolism	0.0178179	phospholipase A2-like [<i>Bombyx mori</i>], 4phospholipase A2-like isoform X1 [<i>Bombyx mori</i>] 15-hydroxyprostaglandin dehydrogenase [NAD(+)]-like [<i>Bombyx mori</i>] ,alcohol dehydrogenase precursor [<i>Bombyx mori</i>] ,15-hydroxyprostaglandin dehydrogenase [NAD(+)]-like [<i>Bombyx mori</i>] ,15-hydroxyprostaglandin dehydrogenase [NAD(+)]-like [<i>Bombyx mori</i>] phospholipase A2-like [<i>Bombyx mori</i>] , rRNA 2'-O-methyltransferase fibrillar-like [<i>Bombyx mori</i>], 1-acyl-sn-glycerol-3-phosphate
Transcriptional misregulation in cancer	0.024704244	acyltransferase alpha-like [<i>Bombyx mori</i>] ,phospholipase A2-like isoform X1 [<i>Bombyx mori</i>] cuticular protein RR-2 motif 60 precursor [<i>Bombyx mori</i>], cuticular protein RR-2 motif 58 precursor 03 [<i>Bombyx mori</i>], cuticular protein RR-2 motif 124 precursor [<i>Bombyx mori</i>]
Glycerophospholipid metabolism	0.0263064	lipase 1-like [<i>Bombyx mori</i>], lipase 1-like [<i>Bombyx mori</i>] cuticular protein RR-2 motif 60 precursor [<i>Bombyx mori</i>] ,cuticular protein RR-2 motif 58 precursor 26 [<i>Bombyx mori</i>] ,caspase-8-like [<i>Bombyx mori</i>] .cuticular protein RR-2 motif 124 precursor
RNA polymerase	0.0285058	
Steroid biosynthesis	0.0322554	
Herpes simplex infection	0.0342832	

		<i>[Bombyx mori]</i>
alpha-Linolenic acid metabolism	0.034595265	<i>phospholipase A2-like [Bombyx mori] ,phospholipase A2-like isoform X1 [Bombyx mori]</i>
Salivary secretion	0.065217254	<i>G-protein coupled receptor moody-like [Bombyx mori] ,Osteopontin ,sericin 1-like isoform X8 [Bombyx mori]</i>
Amino sugar and nucleotide sugar metabolism	0.080679888	<i>nose resistant to fluoxetine protein 6-like [Bombyx mori] , N-acetylneuraminate lyase-like [Bombyx mori] ,N-acetylneuraminate lyase-like [Bombyx mori]</i>
Vascular smooth muscle contraction	0.086856672	<i>phospholipase A2-like [Bombyx mori] , G-protein coupled receptor moody-like [Bombyx mori] ,phospholipase A2-like isoform X1 [Bombyx mori]</i>
Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	0.113961615	<i>beta-1,4-galactosyltransferase 7-like [Bombyx mori]</i>
Betalain biosynthesis	0.133264342	<i>extradiol ring-cleavage dioxygenase-like [Bombyx mori]</i>
Toxoplasmosis	0.135497312	<i>caspase-8-like [Bombyx mori] ,cuticular protein 12 glycine-rich 19 precursor [Bombyx mori]</i>
