

Supplementary data 2

DEG analysis

Section 3.2.2

Functional specialization of tissue-exclusive
transcripts

Section 3.2.3

Differential expressions within intersecting tissue
categories

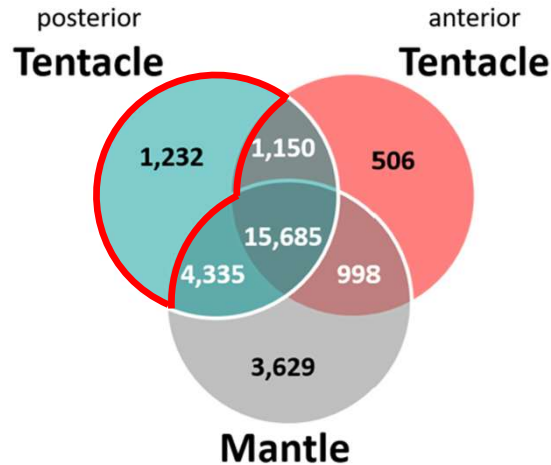


Table S1. Functional annotations for the top 30 transcripts exclusively expressed in the posterior tentacles (PT). List of the 30 highest-expressed PT-exclusive transcripts, excluding poorly characterized or hypothetical proteins. Key annotated functions highlight specialization in chemosensory, photoreceptive, and neural signaling pathways, including GPCRs, Rho GTPase-activating proteins (RhoGAPs), and motor proteins (e.g., KIF22).

No.	Unigene ID	MT FPKM	AT FPKM	PT FPKM	Highest hit in BLAST search	Gene family
1	c66347_g2_i1	0.00	0.00	7.67	violet-sensitive opsin-like [Aplysia californica]	GPCR
2	c125552_g1_i1	0.00	0.00	7.54	rho GTPase-activating protein 35-like [Aplysia californica]	RhoGAP
3	c91002_g1_i1	0.00	0.00	6.82	rho GTPase-activating protein 15-like [Aplysia californica]	RhoGAP
4	c93941_g1_i1	0.00	0.00	5.70	kinesin-like protein KIF22 [Aplysia californica]	motor protein
5	c130179_g1_i1	0.00	0.00	5.54	fMet-Leu-Phe receptor-like [Biomphalaria glabrata]	GPCR
6	c108239_g1_i1	0.00	0.00	5.03	Craniofacial development protein 2-like [Aplysia californica]	
7	c5754_g1_i1	0.00	0.00	4.85	G-protein coupled receptor 139 [Aplysia californica]	GPCR
8	c134046_g1_i1	0.00	0.00	4.78	sodium-dependent phosphate transport protein 3-like [Biomphalaria glabrata]	transporter
9	c112844_g1_i1	0.00	0.00	4.67	protein dopey-1-like [Biomphalaria glabrata]	
10	c117793_g1_i1	0.00	0.00	4.67	E3 ubiquitin-protein ligase HERC1 [Biomphalaria glabrata]	
11	c68776_g2_i1	0.00	0.00	4.27	histone-lysine N-methyltransferase SETMAR [Elysia marginata]	
12	c122024_g1_i1	0.00	0.00	4.27	sodium-coupled monocarboxylate transporter 1-like [Aplysia californica]	transporter
13	c50812_g1_i1	0.00	0.00	4.24	adenosine receptor A1-like [Aplysia californica]	GPCR
14	c130532_g1_i1	0.00	0.00	4.24	low density lipoprotein receptor adapter protein 1-A-like [Aplysia californica]	
15	c115923_g1_i1	0.00	0.00	4.24	fucoselectin-4-like [Biomphalaria glabrata]	
16	c128622_g1_i1	0.00	0.00	3.93	allatostatin-A receptor-like [Aplysia californica]	GPCR
17	c126386_g1_i1	0.00	0.00	3.93	sperm-associated antigen 17-like [Mizuhopecten yessoensis]	
18	c21582_g1_i1	0.00	0.00	3.93	melanopsin-like [Biomphalaria glabrata]	GPCR
19	c96528_g1_i1	0.00	0.00	3.90	allatostatin-A receptor-like [Aplysia californica]	GPCR
20	c116591_g1_i1	0.00	0.00	3.86	cyclic nucleotide-gated cation channel beta-1-like [Biomphalaria glabrata]	cation channel
21	c128610_g1_i1	0.00	0.00	3.82	E3 ubiquitin-protein ligase UBR4-like [Aplysia californica]	
22	c133174_g1_i1	0.00	0.00	3.77	synergism gamma-like [Biomphalaria glabrata]	vesicle component
23	c130967_g1_i1	0.00	0.00	3.55	WD repeat and FYVE domain-containing protein 3-like [Aplysia californica]	
24	c133621_g1_i1	0.00	0.00	3.36	coiled-coil alpha-helical rod protein 1-like [Aplysia californica]	
25	c84624_g7_i1	0.00	0.00	3.30	G-protein coupled receptor [Biomphalaria glabrata]	GPCR
26	c79051_g3_i1	0.00	0.00	3.24	G-protein coupled receptor B0563.6 [Biomphalaria glabrata]	GPCR
27	c112038_g1_i1	0.00	0.00	3.19	bcl-2-related ovarian killer protein homolog B-like [Biomphalaria glabrata]	
28	c121795_g1_i1	0.00	0.00	3.17	cell division control protein 42 homolog [Aplysia californica]	
29	c122549_g1_i1	0.00	0.00	3.11	zinc finger and BTB domain-containing protein 45-like [Aplysia californica]	
30	c109014_g1_i1	0.00	0.00	3.07	chemosensory receptor A [Elysia marginata]	GPCR

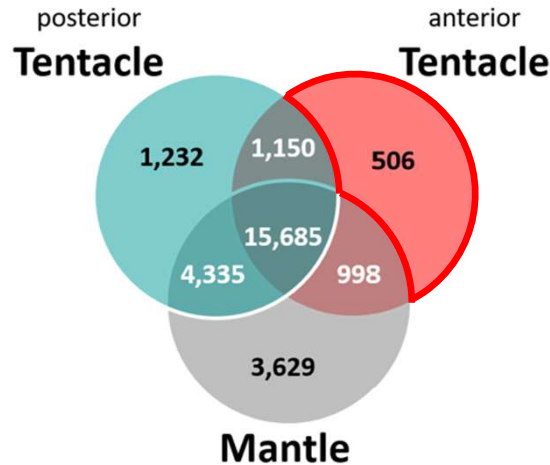


Table S2. Functional annotations for the top 30 transcripts exclusively expressed in the anterior tentacles (AT). List of the 30 highest-expressed AT-exclusive transcripts, excluding poorly characterized or hypothetical proteins. Annotated functions highlight specialization in structural remodeling and synaptic transmission, including transmembrane proteases, collagen alpha-3(VI) chains, acetylcholinesterase (AChE) enzymes, nicotinic and muscarinic acetylcholine receptors (AChR), and Cys-loop ligand-gated ion channels.

No.	Unigene ID	MT FPKM	AT FPKM	PT FPKM	Highest hit in BLAST search	Gene family
1	c81109_g1_i2	0.00	171.33	0.00	transmembrane protease serine 9-like [Biomphalaria glabrata]	protease
2	c84862_g1_i2	0.00	91.82	0.00	collagen alpha-3(VI) chain-like [Biomphalaria glabrata]	extracellular matrix
3	c72478_g2_i1	0.00	57.38	0.00	cell wall protein DAN4-like [Biomphalaria glabrata]	extracellular matrix
4	c71559_g1_i1	0.00	45.85	0.00	acetylcholinesterase-like [Aplysia californica]	AChE
5	c85289_g2_i2	0.00	14.00	0.00	endothelin-converting enzyme 1 [Plakobranthus ocellatus]	metalloprotease
6	c69706_g1_i1	0.00	5.99	0.00	growth hormone secretagogue receptor type 1-like [Biomphalaria glabrata]	GPCR
7	c85289_g1_i1	0.00	5.49	0.00	endothelin-converting enzyme 1 [Plakobranthus ocellatus]	metalloprotease
8	c128939_g1_i1	0.00	5.14	0.00	growth hormone secretagogue receptor type 1-like [Biomphalaria glabrata]	GPCR
9	c130888_g1_i1	0.00	4.69	0.00	protein phosphatase 1 regulatory subunit 12A-like [Biomphalaria glabrata]	
10	c101428_g1_i1	0.00	4.59	0.00	allatostatin-A receptor-like [Biomphalaria glabrata]	GPCR
11	c96255_g1_i1	0.00	4.59	0.00	nicotinic acetylcholine receptor subunit type A [Lymnaea stagnalis]	nAChR
12	c116902_g1_i1	0.00	4.21	0.00	sialin-like [Aplysia californica]	anion transporter
13	c38416_g1_i1	0.00	3.91	0.00	phytanoyl-CoA dioxygenase domain-containing protein 1-like [Aplysia californica]	
14	c134110_g1_i1	0.00	3.69	0.00	liprin-beta-1-like [Aplysia californica]	
15	c107155_g1_i1	0.00	3.68	0.00	growth hormone secretagogue receptor type 1-like [Biomphalaria glabrata]	GPCR
16	c10191_g1_i1	0.00	3.60	0.00	coiled-coil domain-containing protein 157-like [Biomphalaria glabrata]	
17	c108630_g1_i1	0.00	3.59	0.00	tyrosine-protein kinase Src42A-like [Biomphalaria glabrata]	
18	c81415_g1_i1	0.00	3.53	0.00	transcription factor Sp5-like [Biomphalaria glabrata]	TF
19	c120054_g1_i1	0.00	3.43	0.00	G protein-activated inward rectifier potassium channel 4-like [Biomphalaria glabrata]	GPCR-signaling
20	c112034_g1_i1	0.00	3.35	0.00	organic cation transporter protein-like [Aplysia californica]	cation transporter
21	c128475_g1_i1	0.00	3.27	0.00	BRCA1-associated RING domain protein 1-like [Biomphalaria glabrata]	
22	c41330_g1_i1	0.00	3.22	0.00	muscarinic acetylcholine receptor M4-like [Biomphalaria glabrata]	GPCR
23	c117183_g1_i1	0.00	3.06	0.00	cilia- and flagella-associated protein 44-like [Biomphalaria glabrata]	
24	c112839_g1_i1	0.00	2.99	0.00	acetyl-coenzyme A synthetase, cytoplasmic-like [Aplysia californica]	
25	c91963_g1_i1	0.00	2.99	0.00	cys-loop ligand-gated ion channel [Aplysia californica]	ion channel
26	c19913_g1_i1	0.00	2.81	0.00	THUMP domain-containing protein 1-like [Aplysia californica]	
27	c135816_g1_i1	0.00	2.64	0.00	phospholipase D1-like [Biomphalaria glabrata]	
28	c132586_g1_i1	0.00	2.64	0.00	dynein heavy chain 6, axonemal-like [Aplysia californica]	
29	c120699_g1_i1	0.00	2.64	0.00	E3 ubiquitin-protein ligase NEDD4-like [Aplysia californica]	
30	c118582_g1_i1	0.00	2.64	0.00	tyramine beta-hydroxylase-like [Biomphalaria glabrata]	

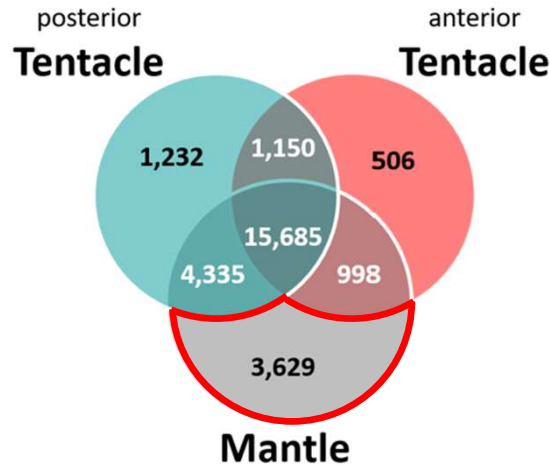


Table S3. Functional annotations for the top 30 transcripts exclusively expressed in mantle tissue (MT). List of the 30 highest-expressed MT-exclusive transcripts, excluding poorly characterized or hypothetical proteins. Annotated functions reflect specialization in muscular architecture and mucosal defense mechanisms, including striated muscle-specific myosin essential and heavy light chains, gastropod defense proteins (incilarin A, B, and C), and mucin-5AC-like transcripts.

No.	Unigene ID	MT FPKM	AT FPKM	PT FPKM	Highest hit in BLAST search	Gene family
1	c52240_g1_i1	265.27	0.00	0.00	myosin essential light chain, striated adductor muscle-like [Biomphalaria glabrata]	
2	c75948_g1_i2	249.32	0.00	0.00	incilarin A [Meghimatium fruhstorferi]	AMP
3	c81571_g1_i1	128.30	0.00	0.00	sarcoplasmic reticulum histidine-rich calcium-binding protein-like [Aplysia californica]	
4	c81498_g1_i1	120.94	0.00	0.00	fibulin-1-like isoform X3 [Physella acuta]	glycoprotein
5	c83434_g2_i2	102.43	0.00	0.00	sodium-coupled monocarboxylate transporter 1-like [Biomphalaria glabrata]	
6	c84921_g1_i1	79.72	0.00	0.00	acyl-CoA synthetase family member 2, mitochondrial-like [Aplysia californica]	
7	c61923_g1_i1	76.21	0.00	0.00	sodium-dependent glucose transporter 1A-like [Aplysia californica]	transporter
8	c63810_g2_i1	73.97	0.00	0.00	incilarin B [Meghimatium fruhstorferi]	AMP
9	c102497_g1_i1	69.68	0.00	0.00	myosin heavy chain, striated muscle-like [Bulinus ugandae]	
10	c63810_g1_i1	68.77	0.00	0.00	incilarin A [Meghimatium fruhstorferi]	AMP
11	c72709_g1_i2	65.17	0.00	0.00	voltage-gated sodium channel beta subunit 4 [Lymnaea stagnalis]	sodium channel
12	c22619_g1_i1	63.32	0.00	0.00	myosin heavy chain, striated muscle-like [Biomphalaria glabrata]	
13	c72709_g2_i1	56.33	0.00	0.00	voltage-gated sodium channel beta subunit 4 [Lymnaea stagnalis]	
14	c68258_g1_i1	48.65	0.00	0.00	cystathionine gamma-lyase-like [Aplysia californica]	
15	c81498_g2_i1	46.16	0.00	0.00	latent-transforming growth factor beta-binding protein 4-like [Physella acuta]	
16	c21911_g2_i1	44.61	0.00	0.00	neuropeptide precursor [Ambigolimax valentianus]	neuropeptide
17	c87007_g1_i1	41.47	0.00	0.00	endothelin-converting enzyme-like 1 [Biomphalaria glabrata]	metalloprotease
18	c8862_g1_i1	40.51	0.00	0.00	matrilin-like 85 kDa protein [Ambigolimax valentianus]	extracellular matrix
19	c77234_g1_i1	37.24	0.00	0.00	incilarin C [Meghimatium fruhstorferi]	AMP
20	c84853_g1_i2	36.40	0.00	0.00	Craniofacial development protein 2 [Exaipatasia pallida]	
21	c62489_g3_i2	36.32	0.00	0.00	mucin-5AC-like [Aplysia californica]	
22	c34476_g1_i1	33.95	0.00	0.00	kielin/chordin-like protein [Mizuhopecten yessoensis]	extracellular matrix
23	c40185_g1_i1	33.79	0.00	0.00	RNA-directed DNA polymerase from mobile element jockey [Exaipatasia pallida]	
24	c72471_g1_i2	32.63	0.00	0.00	C1q-domain-containing (C1qDC) proteins 6 [Hyriopsis cumingii]	immunity
25	c82198_g1_i1	29.69	0.00	0.00	acetylcholinesterase-like precursor [Aplysia californica]	AChE
26	c81990_g2_i1	27.90	0.00	0.00	complement C1q tumor necrosis factor-related protein 4-like [Crassostrea virginica]	immunity
27	c84658_g1_i1	25.14	0.00	0.00	solute carrier family 22 member 3-like [Aplysia californica]	ion transporter
28	c64034_g1_i1	24.08	0.00	0.00	sodium-coupled monocarboxylate transporter 2-like [Aplysia californica]	transporter
29	c82647_g8_i1	21.02	0.00	0.00	cat eye syndrome critical region protein 5 homolog [Aplysia californica]	
30	c80314_g1_i1	20.03	0.00	0.00	alpha-aminoadipic semialdehyde synthase, mitochondrial-like [Aplysia californica]	

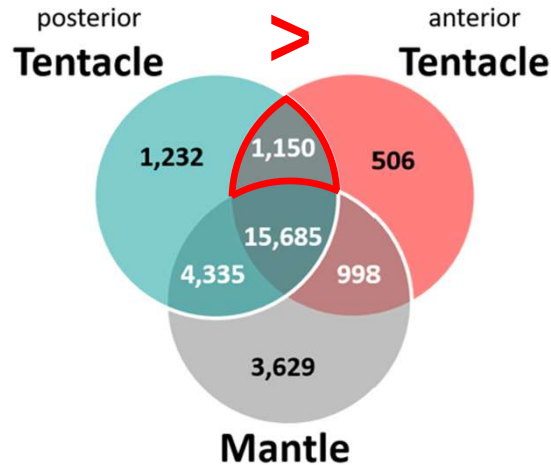


Table S4. Top 30 transcripts displaying preferential expression in posterior tentacles (PT) within the shared tentacular transcriptome. List of the top 30 transcripts filtered from the 1,150 transcripts shared exclusively between PT and AT, ranked by higher fold change (FC) in PT. Uncharacterized or hypothetical proteins were excluded. Key annotated functions highlight specialized chemosensory and metabolic specialization, including amiloride-sensitive sodium channel subunits (DEG/ENaC), tyramine beta-hydroxylase, and cytochrome P450 enzymes, along with several GPCRs.

No.	Unigene ID	MT FPKM	AT FPKM	PT FPKM	PT/AT (FC)	Highest hit in BLAST search	Gene family
1	c72011_g1_i1	0.00	0.32	88.32	58.1	macrophage migration inhibitory factor-like [Aplysia californica]	
2	c83176_g2_i1	0.00	16.29	146.02	9.2	tyramine beta-hydroxylase [Biomphalaria pfeifferi]	
3	c83176_g1_i1	0.00	7.65	66.67	7.7	tyramine beta-hydroxylase-like [Aplysia californica]	
4	c83831_g3_i1	0.00	1.54	19.17	6.7	GTPase IMAP family member 7-like [Aplysia californica]	
5	c75719_g1_i1	0.00	10.78	51.22	4.4	amine sulfotransferase-like [Aplysia californica]	
6	c84991_g3_i2	0.00	0.83	8.75	4.4	amiloride-sensitive sodium channel subunit beta-2-like [Aplysia californica]	DEG-ENaC
7	c83243_g2_i1	0.00	2.97	18.09	4.2	cytochrome P450 2U1-like [Aplysia californica]	P450
8	c82984_g3_i1	0.00	0.20	4.90	3.8	versicolorin reductase-like [Aplysia californica]	
9	c80151_g1_i1	0.00	6.22	28.50	3.8	amiloride-sensitive sodium channel subunit alpha-like [Aplysia californica]	DEG-ENaC
10	c81086_g1_i1	0.00	0.64	6.33	3.6	serum paraoxonase/arylesterase 1-like [Biomphalaria glabrata]	
11	c84274_g1_i1	0.00	1.58	9.98	3.5	ammonium transporter Rh type A-like [Biomphalaria glabrata]	
12	c65608_g1_i1	0.00	0.14	4.18	3.5	neuropeptides capa receptor-like [Aplysia californica]	GPCR
13	c86643_g2_i1	0.00	0.23	4.38	3.4	solute carrier organic anion transporter family member 2A1-like [Aplysia californica]	
14	c80057_g1_i1	0.00	1.48	9.03	3.3	cytochrome P450 2J1-like [Biomphalaria glabrata]	P450
15	c81266_g1_i1	0.00	1.32	8.30	3.3	cubilin-like [Haliotis asinina]	
16	c83128_g1_i2	0.00	0.41	4.80	3.2	potassium voltage-gated channel subfamily C member 3-like [Aplysia californica]	
17	c83246_g4_i1	0.00	4.27	17.12	3.1	reverse transcriptase [Plakobranchus ocellatus]	
18	c82467_g2_i1	0.00	3.61	14.85	3.0	cytochrome P450 2J1-like [Biomphalaria glabrata]	P450
19	c85452_g3_i1	0.00	0.49	4.60	3.0	ankyrin repeat domain-containing protein 34B [Numida meleagris]	
20	c52780_g1_i1	0.00	0.21	3.43	2.8	fukutin-related protein [Biomphalaria glabrata]	
21	c64931_g1_i1	0.00	1.34	6.80	2.7	cytochrome P450 2E1-like [Biomphalaria glabrata]	P450
22	c29011_g2_i1	0.00	0.59	4.31	2.6	thyrotropin-releasing hormone receptor [Aplysia californica]	GPCR
23	c82298_g5_i4	0.00	0.27	3.31	2.6	allatostatin-A receptor-like [Aplysia californica]	GPCR
24	c83211_g1_i4	0.00	0.51	3.64	2.4	cytochrome P450 2U1-like [Biomphalaria glabrata]	P450
25	c76130_g3_i1	0.00	0.76	4.12	2.3	B-cell lymphoma 3 protein homolog [Salmo salar]	
26	c41368_g1_i1	0.00	0.12	2.38	2.3	growth hormone secretagogue receptor type 1-like [Biomphalaria glabrata]	GPCR
27	c78769_g3_i1	0.00	0.12	2.27	2.2	allatostatin-A receptor-like [Biomphalaria glabrata]	GPCR
28	c85341_g6_i1	0.00	4.64	12.82	2.2	protein AIG1-like [Biomphalaria glabrata]	
29	c71338_g1_i1	0.00	0.45	3.05	2.2	allatostatin-A receptor-like [Aplysia californica]	GPCR
30	c61503_g1_i1	0.00	0.58	3.34	2.2	allatostatin-A receptor-like [Biomphalaria glabrata]	GPCR

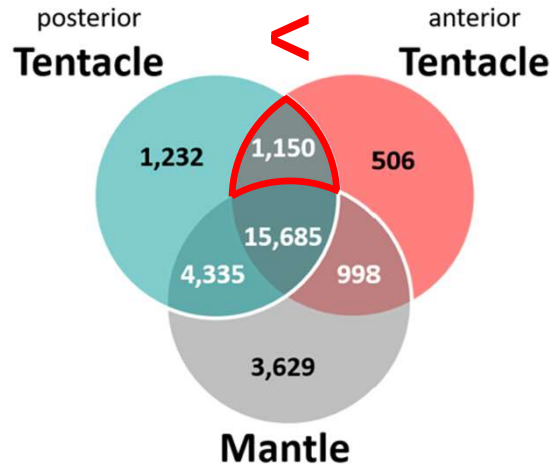


Table S5. Top 30 transcripts displaying preferential expression in anterior tentacles (AT) within the shared tentacular transcriptome. List of the top 30 transcripts selected from the 1,150 transcripts shared exclusively between AT and PT, ranked by higher relative expression in AT. Uncharacterized or hypothetical proteins were excluded. Key annotated functions highlight structural remodeling, enzymatic activity, and signaling pathways, including prestalk proteins, Bsmpt (basal-superficial marker) proteins, trypsins, mitogen-activated protein kinases (MAPKs), and some GPCRs.

No.	Unigene ID	MT FPKM	AT FPKM	PT FPKM	PT/AT (FC)	Highest hit in BLAST search	Gene family
1	c83415_g1_i1	0.00	10468.51	0.02	-8362.7	prestalk protein [Biomphalaria pfeifferi]	
2	c85787_g1_i1	0.00	622.25	0.30	-452.7	Bsmpt protein [Biomphalaria glabrata]	
3	c64584_g1_i1	0.00	79.79	1.65	-30.0	tyramine beta-hydroxylase-like [Biomphalaria glabrata]	
4	c83034_g2_i1	0.00	17.39	0.02	-17.5	collagen alpha-3(VI) chain-like [Biomphalaria glabrata]	
5	c82067_g1_i6	0.00	16.66	0.04	-16.7	trypsin-7-like [Biomphalaria glabrata]	protease
6	c81211_g1_i2	0.00	10.19	1.37	-5.3	mitogen-activated protein kinase kinase kinase ANP1-like [Biomphalaria glabrata]	
7	c64777_g1_i1	0.00	3.94	0.52	-4.1	LINE-1 retrotransposable element ORF2 protein [Elysia marginata]	
8	c120408_g1_i1	0.00	2.69	0.13	-3.9	ankyrin repeat protein RF_0381 [Biomphalaria glabrata]	
9	c86907_g1_i1	0.00	1.63	0.03	-2.9	carboxylesterase NlhH-like [Biomphalaria glabrata]	
10	c19905_g1_i1	0.00	1.67	0.11	-2.9	collectin-10-like [Biomphalaria glabrata]	
11	c125961_g1_i1	0.00	2.95	0.88	-2.7	allatostatin-A receptor-like [Aplysia californica]	GPCR
12	c97686_g1_i1	0.00	1.63	0.26	-2.6	alpha-2C adrenergic receptor-like [Biomphalaria glabrata]	GPCR
13	c53098_g1_i1	0.00	2.56	0.80	-2.5	innexin unc-9-like [Aplysia californica]	
14	c112057_g1_i1	0.00	1.38	0.15	-2.5	tetratricopeptide repeat protein 39B-like [Aplysia californica]	
15	c123988_g1_i1	0.00	2.34	0.71	-2.5	G-protein coupled receptor 54-like [Biomphalaria glabrata]	GPCR
16	c67835_g2_i1	0.00	1.46	0.23	-2.5	retinal homeobox protein Rx2-like [Aplysia californica]	
17	c107751_g1_i1	0.00	2.16	0.65	-2.5	growth hormone secretagogue receptor type 1-like [Biomphalaria glabrata]	GPCR
18	c92122_g1_i1	0.00	2.10	0.63	-2.4	cytochrome P450 2U1-like [Aplysia californica]	P450
19	c69572_g1_i1	0.00	1.55	0.35	-2.4	zinc finger protein 648 [Elysia marginata]	
20	c98863_g1_i1	0.00	2.07	0.63	-2.4	tau-tubulin kinase 1 [Plakobranhus ocellatus]	
21	c12835_g1_i1	0.00	1.37	0.22	-2.4	chordin-like [Aplysia californica]	
22	c84230_g2_i1	0.00	11.02	4.47	-2.4	neprilysin-1 [Palaemon carinicauda]	
23	c51367_g2_i1	0.00	1.92	0.58	-2.4	adenosine receptor A1-like [Aplysia californica]	GPCR
24	c100566_g1_i1	0.00	1.83	0.56	-2.4	serine carboxypeptidase CPVL [Biomphalaria glabrata]	
25	c8397_g1_i1	0.00	2.78	1.05	-2.3	RNA-directed DNA polymerase from mobile element jockey-like [Aplysia californica]	
26	c124127_g1_i1	0.00	1.40	0.38	-2.3	rhodopsin-like [Biomphalaria glabrata]	GPCR
27	c21299_g1_i1	0.00	6.87	3.07	-2.2	innexin unc-9-like [Biomphalaria glabrata]	
28	c76762_g6_i2	0.00	2.07	0.77	-2.2	RNA-directed DNA polymerase from mobile element jockey-like [Aplysia californica]	
29	c102828_g1_i1	0.00	1.57	0.50	-2.2	deleted in azoospermia-like [Biomphalaria glabrata]	
30	c44864_g3_i1	0.00	1.86	0.69	-2.2	piggyBac transposable element-derived protein 4-like [Aplysia californica]	

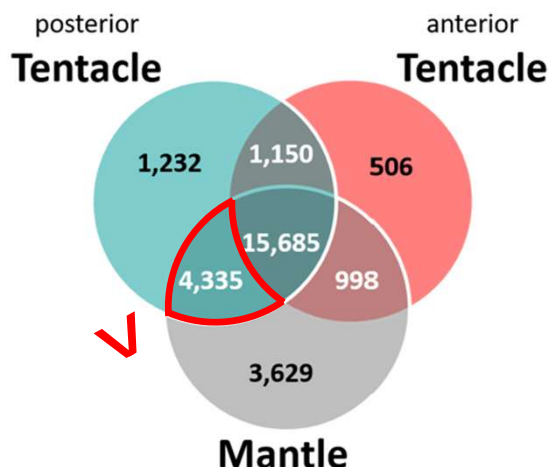


Table S6. Top 30 transcripts displaying preferential expression in posterior tentacles (PT) within the shared PT–MT transcriptome. List of the top 30 transcripts selected from the 4,335 transcripts shared exclusively between PT and MT, ranked by higher relative expression in PT. Uncharacterized or hypothetical proteins were excluded. Key annotated functions highlight specialized neuroendocrine and chemosensory signaling, including GPCRs, G protein signaling pathway components, and peptide hormones.

No.	Unigene ID	MT FPKM	AT FPKM	PT FPKM	PT/MT (FC)	Highest hit in BLAST search	Gene family
1	c59584_g1_i1	0.04	0.00	5.24	6.2	alpha-tocopherol transfer protein-like [Aplysia californica]	
2	c33640_g1_i1	0.19	0.00	4.06	4.7	adenosine receptor A1-like [Aplysia californica]	GPCR
3	c85452_g5_i1	0.78	0.00	5.19	4.3	Oxysterol-binding protein-related protein 1	
4	c52876_g2_i1	0.14	0.00	2.78	3.5	myomodulin 3 [Deroceas reticulatum]	neuropeptide
5	c113970_g1_i1	0.32	0.00	2.82	3.4	insulin 4 [Deroceas reticulatum]	peptide hormone
6	c85045_g3_i1	0.44	0.00	2.94	3.2	retrovirus-related Pol polyprotein from type-1 retrotransposable element R2 [Elysia marginata]	
7	c22116_g2_i1	0.80	0.00	3.57	3.1	F-box and leucine-rich repeat protein 3 [Plakobranthus ocellatus]	
8	c31920_g1_i2	0.05	0.00	2.16	3.0	regulator of G-protein signaling 3 [Biomphalaria glabrata]	G protein signaling
9	c117567_g1_i1	1.30	0.00	4.35	2.8	disabled homolog 2-interacting protein-like [Aplysia californica]	
10	c66825_g1_i1	0.59	0.00	2.64	2.7	ATP-binding cassette sub-family A member 2-like [Aplysia californica]	ABC
11	c16300_g1_i1	0.43	0.00	2.37	2.7	guanine nucleotide exchange factor MSS4-like [Biomphalaria glabrata]	
12	c133283_g1_i1	1.20	0.00	4.01	2.7	lisH domain and HEAT repeat-containing protein KIAA1468-like [Biomphalaria glabrata]	
13	c27709_g1_i1	0.09	0.00	1.86	2.7	frizzled-5-like [Aplysia californica]	GPCR
14	c97809_g1_i1	0.58	0.00	2.57	2.7	zinc finger homeobox protein 4-like [Biomphalaria glabrata]	
15	c49038_g1_i1	0.08	0.00	1.75	2.6	frizzled-5-like [Aplysia californica]	GPCR
16	c46860_g1_i1	0.25	0.00	1.86	2.6	long-chain-fatty-acid--CoA ligase 5-like [Aplysia californica]	
17	c109719_g1_i1	0.97	0.00	3.24	2.6	protein tilB homolog [Strongylocentrotus purpuratus]	
18	c45572_g2_i1	0.95	0.00	3.18	2.6	glutaminy-peptide cyclotransferase-like protein [Biomphalaria glabrata]	
19	c6087_g2_i1	0.95	0.00	3.18	2.6	pre-mRNA-splicing factor ATP-dependent RNA helicase PRP16-like [Aplysia californica]	
20	c108385_g1_i1	0.84	0.00	2.81	2.5	telomerase protein component 1-like [Aplysia californica]	
21	c36581_g2_i1	0.80	0.00	2.68	2.4	PR domain zinc finger protein 10-like [Aplysia californica]	
22	c23131_g1_i1	0.31	0.00	1.69	2.4	TBC1 domain family member 2b [Plakobranthus ocellatus]	
23	c91103_g1_i1	0.68	0.00	2.27	2.4	leucine-rich repeat-containing protein 58-like [Aplysia californica]	
24	c10055_g1_i1	0.67	0.00	2.24	2.4	DNA-binding protein Ikaros-like [Aplysia californica]	
25	c104446_g1_i1	0.67	0.00	2.24	2.4	intraflagellar transport protein 140 homolog [Aplysia californica]	
26	c97208_g1_i1	0.64	0.00	2.14	2.3	SH2B adapter protein 2-like [Aplysia californica]	
27	c110383_g1_i1	0.23	0.00	1.53	2.3	kinase suppressor of Ras 2-like [Biomphalaria glabrata]	
28	c104496_g1_i1	0.39	0.00	1.74	2.3	Guanine nucleotide-binding protein G(q) subunit alpha [Lymnaea stagnalis]	G protein signaling
29	c24460_g1_i1	0.61	0.00	2.03	2.3	multiple PDZ domain protein-like [Biomphalaria glabrata]	
30	c124533_g1_i1	0.60	0.00	2.01	2.3	G protein-coupled receptor kinase 5 [Aplysia californica]	G protein signaling

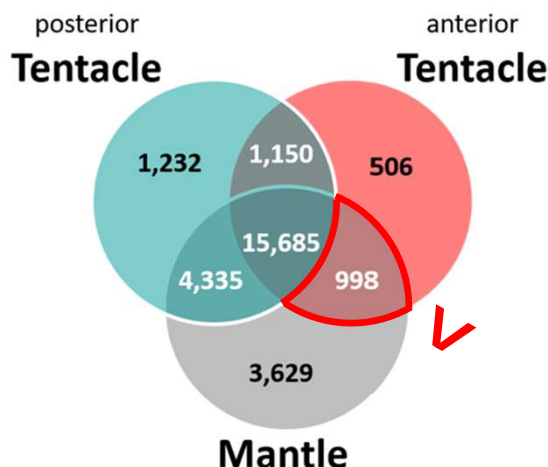


Table S7. Top 30 transcripts displaying preferential expression in anterior tentacles (AT) within the shared AT–MT transcriptome. List of the top 30 transcripts selected from the 998 transcripts shared exclusively between AT and MT, ranked by higher relative expression in AT. Uncharacterized or hypothetical proteins were excluded. Key annotated functions include glutathione S-transferases (GSTs), lipocalins, various metabolic enzymes, and a single GPCR.

No.	Unigene ID	MT FPKM	AT FPKM	PT FPKM	AT/MT (FC)	Highest hit in BLAST search	Gene family
1	c50575_g1_i1	0.03	1024.49	0.00	813.3	bypass of stop codon protein 1 [Biomphalaria glabrata]	
2	c83515_g1_i1	0.22	448.67	0.00	369.3	prestalk protein [Biomphalaria pfeifferi]	
3	c76900_g1_i1	0.54	89.61	0.00	79.5	fatty acid-binding protein [Plakobranthus ocellatus]	lipocalin
4	c83468_g1_i2	0.31	49.39	0.00	45.1	trypsin-1-like [Biomphalaria pfeifferi]	protease
5	c83034_g1_i2	0.03	34.16	0.00	32.5	collagen alpha-4(VI) chain-like [Physella acuta]	
6	c75934_g1_i1	2.67	27.81	0.00	26.9	acetylcholinesterase-like [Biomphalaria glabrata]	AChE
7	c76471_g1_i2	0.25	17.50	0.00	17.7	glutathione S-transferase 1 [Aplysia californica]	GST
8	c77941_g1_i1	0.19	13.49	0.00	14.1	protein jagged-1b [Biomphalaria pfeifferi]	
9	c63165_g1_i1	2.17	10.96	0.00	11.8	adenosine deaminase AGSA-like [Biomphalaria glabrata]	
10	c81901_g2_i2	0.15	9.20	0.00	10.2	endothelin-converting enzyme 1 [Plakobranthus ocellatus]	metalloprotease
11	c84859_g3_i1	1.18	7.49	0.00	8.7	LINE-1 retrotransposable element ORF2 protein [Stylophora pistillata]	
12	c71974_g1_i1	0.05	7.41	0.00	8.6	calmodulin-like [Mytilus trossulus]	
13	c113673_g1_i1	1.90	5.99	0.00	7.3	transcription initiation factor TFIID subunit 3-like [Biomphalaria glabrata]	TF
14	c63165_g2_i1	2.21	5.38	0.00	6.7	adenosine deaminase AGSA precursor [Aplysia californica]	
15	c70583_g2_i1	0.07	4.05	0.00	5.4	extracellular serine/threonine protein CG31145-like [Physella acuta]	
16	c120164_g1_i1	1.43	3.68	0.00	5.1	dynammin-binding protein-like [Biomphalaria glabrata]	
17	c14287_g2_i1	1.31	3.35	0.00	4.8	Leucine rich repeat C-terminal domain [Bulinus ugandae]	
18	c130949_g1_i1	0.66	2.45	0.00	3.8	Fanconi anemia group J protein-like [Biomphalaria glabrata]	
19	c132601_g1_i1	0.50	2.41	0.00	3.8	nuclear hormone receptor HR3 [Biomphalaria glabrata]	nuclear receptor
20	c113152_g1_i1	0.57	2.10	0.00	3.5	ribonuclease D (cyanobacteria)	
21	c53753_g1_i1	0.34	1.92	0.00	3.3	integumentary mucin C.1-like [Biomphalaria glabrata]	
22	c38416_g2_i1	0.15	1.89	0.00	3.3	phytanoyl-CoA dioxygenase domain-containing protein 1-like [Aplysia californica]	
23	c86370_g1_i1	0.50	1.83	0.00	3.2	endonuclease-reverse transcriptase [Elysia marginata]	
24	c69574_g2_i1	0.26	1.78	0.00	3.1	G-protein coupled receptor mth2-like [Plakobranthus ocellatus]	GPCR
25	c84807_g7_i2	0.02	1.61	0.00	3.0	nuclear receptor subfamily 2 group E member 1-like [Biomphalaria glabrata]	nuclear receptor
26	c13806_g1_i1	0.07	1.61	0.00	3.0	chordin-like [Berghia stephanieae]	
27	c9746_g1_i1	0.28	1.59	0.00	2.9	carbohydrate sulfotransferase 15-like [Aplysia californica]	
28	c104254_g1_i1	0.31	1.47	0.00	2.8	dTDP-3-amino-3,6-dideoxy-alpha-D-galactopyranose transaminase-like [Physella acuta]	
29	c113466_g1_i1	0.30	1.40	0.00	2.7	2,3-bisphosphoglycerate-independent phosphoglycerate mutase (bacteria)	
30	c39185_g1_i1	0.08	1.24	0.00	2.6	homeotic protein empty spiracles [Biomphalaria pfeifferi]	

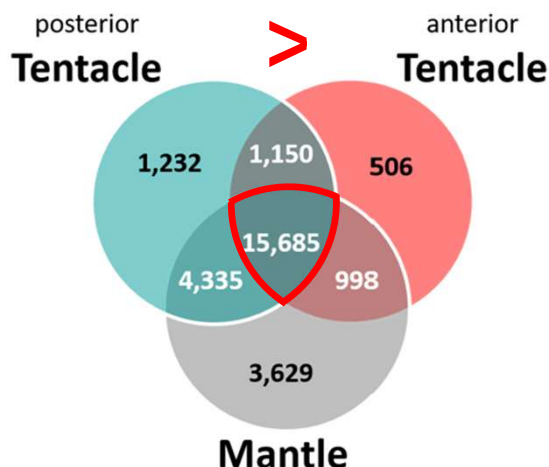


Table S8. Top 30 transcripts displaying preferential expression in posterior tentacles (PT) relative to anterior tentacles (AT) within the ubiquitous core transcriptome. List of the top 30 transcripts selected from the core set of 15,685 transcripts expressed across all three tissue types (PT, AT, and MT), ranked by higher relative expression in PT compared to AT. Uncharacterized or hypothetical proteins were excluded. Key annotated functions include three cytochrome P450s, an ATP-binding cassette (ABC) transporter, two GPCRs, and a neuropeptide.

No.	Unigene ID	MT FPKM	AT FPKM	PT FPKM	PT/AT (FC)	Highest hit in BLAST search	Gene family
1	c82703_g4_i1	4.02	16.16	355.96	27.2	cathepsin L1-like [Aplysia californica]	protease
2	c85989_g1_i1	0.10	0.62	24.08	13.0	transmembrane protein 26-like [Biomphalaria glabrata]	
3	c86280_g1_i1	0.01	28.68	282.18	12.5	cytochrome P450 2J1-like [Biomphalaria glabrata]	P450
4	c86620_g1_i2	0.31	11.76	131.67	11.0	endothelin-converting enzyme 1 [Plakobranthus ocellatus]	
5	c84132_g1_i1	0.01	2.39	39.04	10.4	sushi, von Willebrand factor type A, EGF and pentraxin domain-containing protein 1-like [Biomphalaria glabrata]	
6	c84108_g3_i2	78.35	19.85	153.01	8.0	protein AIG1-like [Biomphalaria glabrata]	
7	c82162_g2_i5	3.23	1.21	19.38	7.8	GTPase IMAP family member [Biomphalaria glabrata]	
8	c86146_g3_i1	0.30	3.77	39.57	7.7	cytochrome P450 2J1-like [Biomphalaria glabrata]	P450
9	c85051_g1_i7	0.20	0.59	13.35	7.5	SET domain protein [Plakobranthus ocellatus]	
10	c85577_g1_i1	17.21	3.48	35.30	7.2	cadherin-23-like [Biomphalaria glabrata]	
11	c41860_g1_i1	0.47	5.74	50.32	7.2	cathepsin L1-like [Biomphalaria glabrata]	protease
12	c84419_g4_i1	4.50	3.54	33.94	6.8	cytochrome P450 2E1-like [Biomphalaria glabrata]	P450
13	c81072_g1_i1	0.02	2.98	29.27	6.7	innexin unc-9-like [Aplysia californica]	
14	c84081_g1_i3	0.02	1.00	14.91	6.7	nose resistant to fluoxetine protein 6-like [Biomphalaria glabrata]	
15	c77136_g2_i1	9.23	1.97	22.09	6.6	mediator of RNA polymerase ii transcription subunit 15 [Plakobranthus ocellatus]	
16	c85229_g1_i1	23.63	8.50	62.25	6.6	retinal dehydrogenase [Lymnaea stagnalis]	
17	c82242_g3_i1	1.41	0.67	11.18	6.0	ATP-binding cassette sub-family G member 2-like [Biomphalaria glabrata]	ABC
18	c81896_g1_i1	10.04	1.71	17.98	5.9	metabotropic glutamate receptor 2 [Biomphalaria glabrata]	GPCR
19	c75897_g1_i1	0.21	2.87	23.44	5.5	callectin-2 [Biomphalaria pfeifferi]	
20	c86210_g2_i1	2.78	0.20	7.39	5.5	threonine-rich gpi-anchored glycoprotein, partial [Biomphalaria glabrata]	
21	c69313_g2_i1	5.12	0.87	10.71	5.2	membrane-associated progesterone receptor component 1-like [Aplysia californica]	
22	c81948_g1_i2	4.73	1.49	14.30	5.2	vesicle-associated membrane protein 7-like [Aplysia californica]	
23	c79514_g1_i1	2.36	11.89	64.49	5.1	orexin receptor type 2-like [Biomphalaria glabrata]	GPCR
24	c68170_g1_i1	3.23	1.11	11.66	5.0	serine/arginine-rich splicing factor 6 [Biomphalaria pfeifferi]	
25	c82366_g2_i1	99.31	59.83	236.73	4.9	neural-cadherin-like [Aplysia californica]	
26	c74460_g1_i1	1.27	61.63	236.03	4.7	FMRamide [Deroceras reticulatum]	neuropeptide
27	c85954_g1_i2	14.69	12.91	62.01	4.6	von Willebrand factor d and egf domain-containing protein, partial [Plakobranthus ocellatus]	
28	c86632_g1_i1	2.98	0.58	7.96	4.6	myosin-VIIa-like [Physella acuta]	
29	c86672_g1_i1	17.90	19.89	90.07	4.5	neurogenic locus notch protein 1, partial [Biomphalaria glabrata]	
30	c81653_g1_i1	6.08	0.55	7.70	4.5	alpha-L-fucosidase-like [Biomphalaria glabrata]	

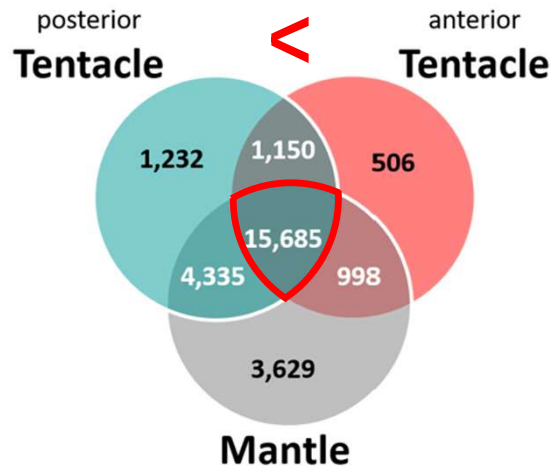


Table S9. Top 30 transcripts displaying preferential expression in anterior tentacles (AT) relative to posterior tentacles (PT) within the ubiquitous core transcriptome. List of the top 30 transcripts selected from the core set of 15,685 transcripts expressed across all three tissue types (PT, AT, and MT), ranked by higher relative expression in AT compared to PT. Uncharacterized or hypothetical proteins were excluded. Key annotated functions are predominantly enzymatic, including various proteases and glutathione S-transferases (GSTs).

No.	Unigene ID	MT FPKM	AT FPKM	PT FPKM	PT/AT (FC)	Highest hit in BLAST search	Gene family
1	c79742_g1_i1	1.13	2592.14	0.10	-1998.6	serine protease 42-like [Aplysia californica]	protease
2	c80859_g2_i2	0.79	1156.93	0.04	-894.4	MOXD1 homolog 1-like [Biomphalaria glabrata]	
3	c74578_g1_i1	0.82	832.71	0.06	-661.3	trypsin-2-like [Aplysia californica]	protease
4	c84482_g1_i2	2.99	634.00	0.02	-528.2	chitinase [Lymnaea stagnalis]	chitinase
5	c80373_g1_i2	0.02	651.86	0.13	-517.3	chitinase-like protein PB1E7.04c, partial [Biomphalaria glabrata]	chitinase
6	c81528_g1_i1	0.05	571.04	0.02	-468.4	chitinase [Lymnaea stagnalis]	chitinase
7	c65521_g1_i1	12.17	755.84	1.84	-244.1	calmodulin-A-like [Lingula anatina]	
8	c81073_g1_i1	0.71	194.04	0.46	-139.7	transmembrane protease serine 9-like [Biomphalaria glabrata]	protease
9	c85049_g1_i2	0.06	152.49	0.19	-125.2	neurogenic locus notch homolog protein 1-like [Aplysia californica]	notch
10	c59594_g1_i1	0.13	135.06	0.02	-118.6	cell wall protein DAN4-like [Biomphalaria glabrata]	
11	c84862_g2_i1	0.09	135.41	0.12	-114.5	collagen alpha-3(VI) chain-like [Biomphalaria glabrata]	
12	c81508_g1_i1	1.89	99.16	0.01	-87.7	matrilin-2-like [Physella acuta]	
13	c66999_g1_i1	14.40	213.24	1.45	-87.4	zonadhesin, partial [Biomphalaria glabrata]	
14	c72478_g3_i1	0.03	83.18	0.04	-73.2	cell wall protein DAN4-like [Biomphalaria glabrata]	
15	c68693_g1_i1	42.55	301.74	3.84	-61.3	peptidyl-prolyl cis-trans isomerase H-like [Biomphalaria glabrata]	
16	c76198_g1_i1	5.02	62.61	0.16	-53.3	acetylcholinesterase-like, partial [Aplysia californica]	AChE
17	c84517_g4_i1	13.18	60.12	0.38	-45.7	fibropellin-1-like [Biomphalaria glabrata]	
18	c33938_g1_i1	1.50	149.27	2.37	-44.0	hornerin-like [Biomphalaria glabrata]	
19	c73531_g1_i1	45.40	345.66	6.78	-42.7	peptidyl-prolyl cis-trans isomerase cyp6-like [Biomphalaria glabrata]	
20	c77650_g1_i1	9.60	70.48	0.92	-37.7	crystal protein-like [Aplysia californica]	
21	c5421_g1_i1	80.67	1265.35	27.39	-36.1	SCO-spondin-like [Aplysia californica]	
22	c76955_g1_i1	195.29	445.40	10.52	-33.9	protein yellow-like [Aplysia californica]	
23	c77147_g1_i1	34.69	220.29	5.67	-32.3	peptidyl-prolyl cis-trans isomerase H-like [Biomphalaria glabrata]	
24	c38286_g1_i2	0.30	30.24	0.13	-27.4	heat shock protein 30C-like [Biomphalaria glabrata]	
25	c69589_g1_i1	12.85	113.52	3.13	-27.0	peptidyl-prolyl cis-trans isomerase cyp6-like [Aplysia californica]	
26	c82280_g3_i2	0.02	21.78	0.04	-21.2	chitinase 3 [Crassostrea gigas]	chitinase
27	c84778_g1_i1	56.30	192.10	7.83	-21.0	glutathione S-transferase 7 [Aplysia californica]	GST
28	c61365_g1_i1	19.46	441.12	18.66	-19.4	normal mucosa of esophagus-specific gene 1 protein [Elysia marginata]	
29	c83358_g3_i1	0.09	19.19	0.11	-18.4	neurogenic locus notch homolog protein 1-like [Biomphalaria glabrata]	notch
30	c77691_g1_i4	6.57	42.46	1.43	-18.2	protein unc-93 homolog A-like [Aplysia californica]	