

**Tab. S1.** Primers used for identification of calmodulin (CaM), troponin C (TnC), essential myosin light chain and regulatory myosin light chain (eMLC and rMLC) of *Peripatoides* sp.

Primer	Sequence
CaM_f	5' -CAA TTG ACT TCC CTG AAT TCC-3'
CaM-r	5' -CGT AAT TNA CCT GAC CGT CGC C-3'
CaM-Ra	5' -GCG GCA GAG TTA CGC CAT GTC ATG ACA AAC TTG_for-3'
CaM-Ra	5' -CAA GTT TGT CAT GAC ATG GCG TAA CTC TGC CGC_rev-3'
TnC-f	5' -GCT TTC CGC CTT TAC GAC AAA G-3'
TnC-r	5' -CNT CAA ANT CNA CNG TAC C-3'
TnC-Ra	5' -GAA ATG ATA GCT GAA ATT GAT ACT GAT GGC AGT GG_for-3'
TnC-Ra	5' -CAT TGA TGT AAC CAT TTC CTT CTT TGT C_rev-3'
eMLC-f	5' -ATG GCC GAT TTG AAA GAT TTT G-3'
eMLC-r	5' -TCA CTT GGA TTC TTC TTC GG-3'
eMLC-Ra	5' -GGA GAA GGA CCA GGG AAC GTA TGC AGA TTT CAT GG_for-3'
eMLC-Ra	5' -CCA TGA AAT CTG CAT ACG TTC CCT GGT CCT TCT CC_rev-3'
rMLC-f	5' -CAG ATC GCC GAN TTC AAG GAG GC-3'
rMLC-r	5' -GGT GAA GTT NAT NGG NCC-3'
rMLC-Ra	5' -CAA AGC CGC CCT TGT TCT GGT CCA TCA TC_rev-3'
rMLC-Ra	5' -CGC TAT GCT CAA TGA AGC CAG TGG CCC C_for-3'

N = any base; f = forward primer (for); r = reverse primer (rev); Ra = RACE-primer.

**Tab. S2.** List of species used for the construction of the troponin C (see Fig. S1a), essential myosin light chain (see Fig. S1b) and regulatory myosin light chain (see Fig. S1c) trees. All sequences were retrieved from the UniProt database (www.uniprot.org).

Accession N°	Species	Subphylum	Submitted protein name
<b>TnC</b>			
A9QQ35	<i>Lycosa singoriensis</i>	Chelicerata	TnC
B1ABS9	<i>Bombyx mandarina</i>	Hexapoda	TnC 25D
B3GDA0	<i>Caenorhabditis brenneri</i>	Nematoda	TnC
C0LZ18	<i>Bombyx mandarina</i>	Hexapoda	TnC
C1BP20	<i>Caligus rogercresseyi</i>	Crustacea	TnC, isoform 1
C1BTD8	<i>Lepeophtheirus salmonis</i>	Crustacea	TnC, isoform 1
C1BUU1	<i>Lepeophtheirus salmonis</i>	Crustacea	TnC, isoform 1
C6GBF4	<i>Homarus americanus</i>	Crustacea	TnC isoform 4
C6GBF5	<i>Homarus americanus</i>	Crustacea	TnC isoform 5
C7EA11	<i>Homarus americanus</i>	Crustacea	Troponin-C isoform 6
D2DGW3	<i>Tyrophagus putrescentiae</i>	Chelicerata	TnC
D3TPS7	<i>Glossina morsitans morsitans</i>	Hexapoda	TnC 73F
D7F1Q2	<i>Crangon crangon</i>	Crustacea	Troponin C
E7CGC5	<i>Penaeus monodon</i>	Crustacea	Troponin C
E7EC48	<i>Antheraea yamamai</i>	Hexapoda	Troponin C
F1AGD3	<i>Aphonopelma sp.</i>	Chelicerata	Troponin C
G8H4B8	<i>Litopenaeus vannamei</i>	Crustacea	Troponin C2
G9B6R3	<i>Hypsibius klebelsbergi</i>	Tardigrada	Troponin C
O45123	<i>Drosophila silvestris</i>	Hexapoda	Troponin C
P21797	<i>Balanus nubilis</i>	Crustacea	TnC, isoform 1
P29289	<i>Homarus americanus</i>	Crustacea	TnC, isoform 1
P47949	<i>Drosophila melanogaster</i>	Hexapoda	TnC, isoform 3
Q09665	<i>Caenorhabditis elegans</i>	Nematoda	TnC, isoform 2
Q1HPK1	<i>Bombyx mori</i>	Hexapoda	TnC
Q1HPU3	<i>Bombyx mori</i>	Hexapoda	TnC 25D
Q5MGI5	<i>Lonomia obliqua</i>	Hexapoda	TnC 1
Q868D2	<i>Lethocerus indicus</i>	Hexapoda	TnC
Q8WRN4	<i>Solenopsis invicta</i>	Hexapoda	TnC
Q9GN70	<i>Perinereis vancaurica tetrudentata</i>	Annelida	TnC
<b>rMLC</b>			
C1BU53	<i>Lepeophtheirus salmonis</i>	Crustacea	rMLC, nonmuscle
D3TSF0	<i>Glossina morsitans morsitans</i>	Hexapoda	rMLC
F1KZM0	<i>Ascaris suum</i>	Nematoda	Myosin regulatory light chain
F1L8H3	<i>Ascaris suum</i>	Nematoda	Myosin regulatory light chain 1
G9B6R2	<i>Hypsibius klebelsbergi</i>	Tardigrada	Regulatory myosin light chain
P19625	<i>Caenorhabditis elegans</i>	Nematoda	Myosin regulatory light chain 1

**Tab. S2.** Continued from previous page.

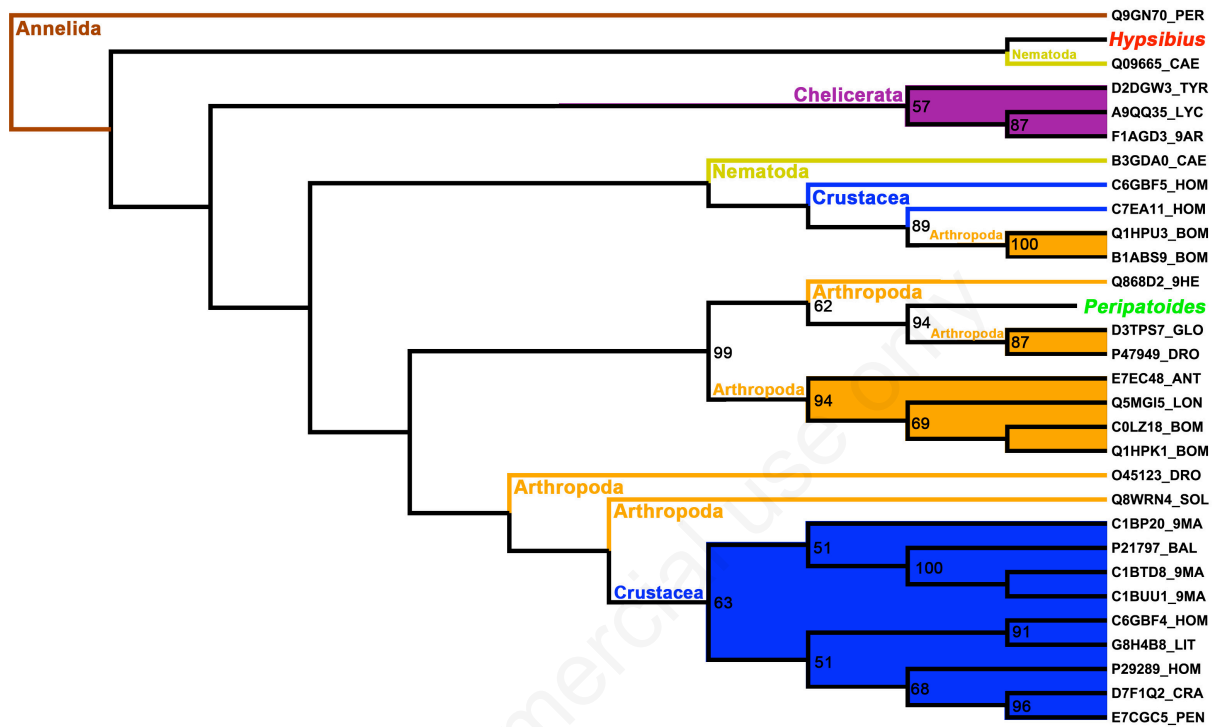
P40423	<i>Drosophila melanogaster</i>	Hexapoda	rMLC sqh
P80164	<i>Lumbricus terrestris</i>	Annelida	Myosin regulatory light chain
Q1HPW9	<i>Bombyx mori</i>	Hexapoda	rMLC
Q6B8B9	<i>Ixodes pacificus</i>	Chelicerata	rMLC
Q9BJM0	<i>Trichinella spiralis</i>	Nematoda	rMLC
Q9GUA2	<i>Riftia pachyptila</i>	Annelida	RLC
<b>eMLC</b>			
C1BRM7	<i>Caligus rogercresseyi</i>	Crustacea	Myosin-2 essential light chain
C1BUF4	<i>Lepeophtheirus salmonis</i>	Crustacea	Myosin-2 essential light chain
C1C0P4	<i>Caligus clemensi</i>	Crustacea	Myosin-2 essential light chain
D3TPR2	<i>Glossina morsitans morsitans</i>	Hexapoda	Myosin essential light chain
G9B6R1	<i>Hypsibius klebelsbergi</i>	Tardigrada	Essential myosin light chain
P53014	<i>Caenorhabditis elegans</i>	Nematoda	Myosin-2 essential light chain
P54357	<i>Drosophila melanogaster</i>	Hexapoda	Myosin II essential light chain
Q1HPI6	<i>Bombyx mori</i>	Hexapoda	Myosin essential light chain
Q4PM87	<i>Ixodes scapularis</i>	Chelicerata	Myosin essential light chain
Q8IT81	<i>Eisenia foetida</i>	Annelida	Myosin essential light chain

**Tab. S3.** List of species used for the comparison in Fig. 5. All sequences were retrieved from the UniProt database (<http://www.uniprot.org>).

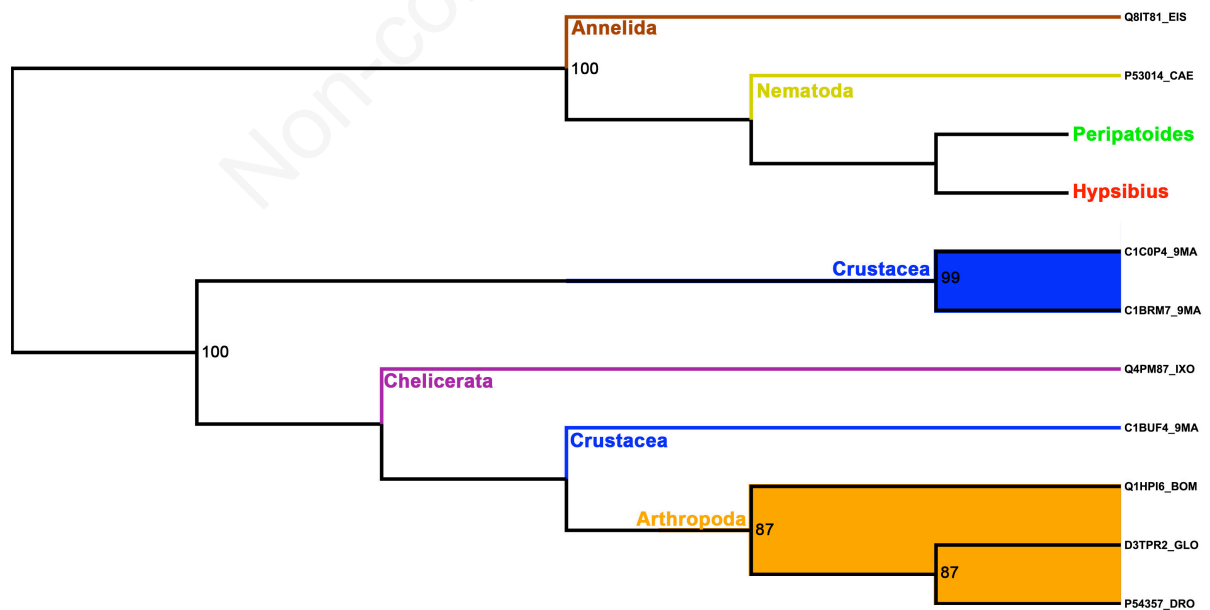
Accession Number	Species	Subphylum
Troponin C		
G9B6R3	<i>Hypsibius klebelsbergi</i>	Tardigrada
XP_003745543	<i>Metaseiulus occidentalis</i>	Chelicerata
B0WZL6	<i>Culex quinquefasciatus</i>	Hexapoda
E5SRF6	<i>Trichinella spiralis</i>	Nematoda
Essential myosin light chain		
G9B6R1	<i>Hypsibius klebelsbergi</i>	Tardigrada
Q3L6K7	<i>Haemaphysalis qinghaiensis</i>	Chelicerata
Q5MGI8	<i>Lonomia obliqua</i>	Hexapoda
C7DXW9	<i>Setaria digitata</i>	Nematoda
Regulatory myosin light chain		
G9B6R2	<i>Hypsibius klebelsbergi</i>	Tardigrada
Q6B8B9	<i>Ixodes pacificus</i>	Chelicerata
B4L6J4	<i>Drosophila mojavensis</i>	Hexapoda
P19625	<i>Caenorhabditis elegans</i>	Nematoda
Calmodulin		
G9B6R4	<i>Hypsibius klebelsbergi</i>	Tardigrada
XP_003748509	<i>Metaseiulus occidentalis</i>	Chelicerata
P62152	<i>Drosophila melanogaster</i>	Hexapoda
O16305	<i>Caenorhabditis elegans</i>	Nematoda

**Fig. S1.** Cladograms showing presumed phylogenetic relationships of troponin Cs (a), essential (b) and regulatory myosin light chain (c) in different multi-taxa, based on combined protein sequences. Nodes are arranged in increasing order. Species accession numbers are given. For details see text.

**a**

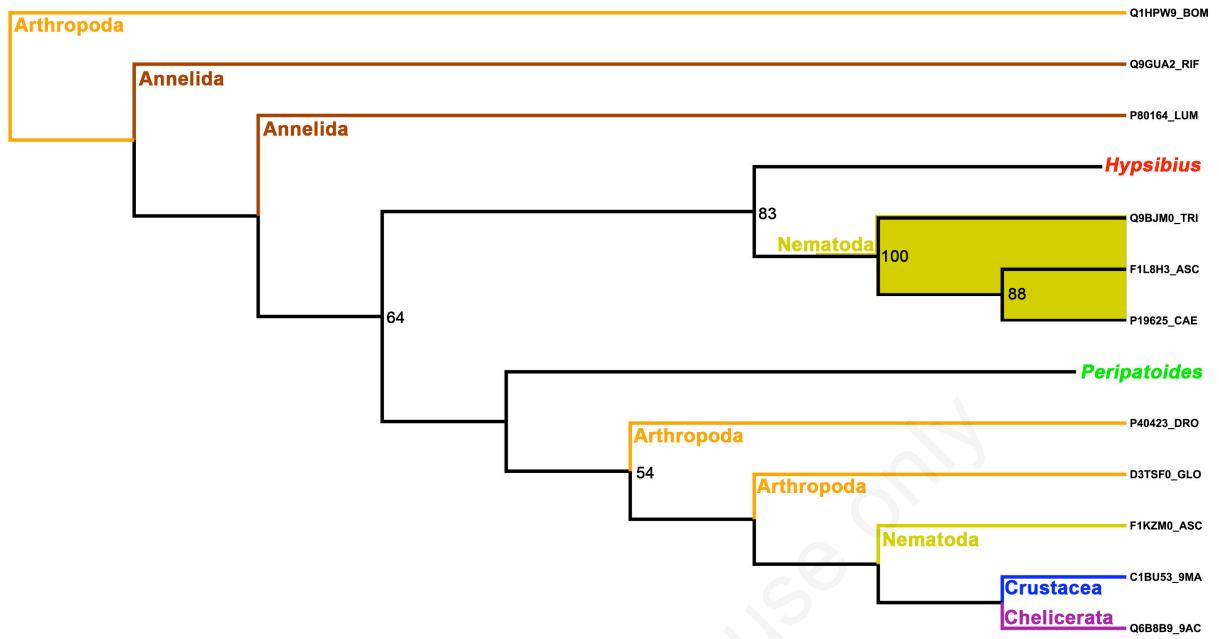


**b**



to be continued on next page

C



Non-commercial use only