

Supplementary file 1. <https://doi.org/10.5852/ejt.2022.845.1959.7937>

Supplementary Table 1 Amplified gene fragments and primers used in the present study.

Gene fragment	Primer	Sequence 5'-3'	Reference
<i>16S</i>	arL	CGCCTGTTTATCAAAAACAT	Palumbi et al. 1991
	brH	CCGGTCTGACTCAGATCACGT	Palumbi et al. 1991
<i>COI</i>	LCO1490	GGTCAACAAAATCATAAAGATATTGG	Folmer et al. 1994
	HCO2198	TAAACTTCAGGGTGACCAAAAAATCA	Folmer et al. 1994
<i>H3</i>	aF	ATGGCTCGTACCAAGCAGACVGC	Colgan et al. 1998
	aR	CKYTTIAGIGCRTAIACCACRTCCAT	Colgan et al. 1998
<i>18S</i>	1F	TACCTGGTTGATCCTGCCAGTAG	Giribet et al. 1996
	5R	CTTGGCAAATGCTTTCGC	Giribet et al. 1996
	3F	GTTCGATTCCGGAGAGGGA	Giribet et al. 1996
	bi	GAGTCTCGTTCGTTATCGGA	Whiting et al. 1997
	a2.0	ATGGTTGCAAAGCTGAAAC	Giribet et al. 1999
	9R	GATCCTTCCGCAGGTTACCTAC	Giribet et al. 1996

Supplementary Table 2 Information on additional sequences taken from GenBank. Species name, specimen ID, sampling locality, sampling depth, GenBank accession numbers (for 18S rRNA, 16S rRNA, COI, and H3), and reference are provided.

Sample	Specimen ID	Location	Depth (m)	18S	16S	COI	H3	Reference
PALAEONEMERTEA								
<i>Balionemertes</i> sp.	IZ-45637	Vietnam, Van-Phong Bay	-	KP270791	KP270841	KP270866	-	Kvist et al (2015)
<i>Callinera grandis</i>	DNA105600	North Sea, Sweden	-	JF293067	JF277570	HQ848626	JF277709	Andrade et al (2012)
<i>Carinina</i> sp.	KB2pal1	Sea of Japan, Vostok Bay	3	KP270788	KP270838	KP270863	MN205439	Chernyshev & Polyakova (2019)
Carininiidae	KB2pal4	Kuril-Kamchatka Trench	5352	MN211366	MN211468	MN205491	-	Chernyshev & Polyakova (2019)
Carininiidae	26DS	Kuril-Kamchatka Trench	7255	MF512064	MF512039	MF512114	-	Chernyshev & Polyakova (2018a)
Carininiidae	39DS	Kuril-Kamchatka Trench	4998	MF512066	MF512041	MF512116	MF512134	Chernyshev & Polyakova (2018a)
<i>Carinoma hamanako</i>	IZ-135341	NW Pacific, Hamanako	301	KF935278	KF935446	KF935500	KF935390	Kvist et al (2014)
<i>Carinoma mutabilis</i>		NE Pacific, San Juan Island	-	-	AJ436832	AJ436942	AJ436985	Thollesson & Norenburg (2003)
<i>Carinoma tremaphoros</i>	DNA105579	NW Atlantic, Fort Pierce	-	JF293049	JF277602	HQ848630	JF277713	Andrade et al (2012)
<i>Cephalothrix alba</i>	IZ-45638	Vietnam, Thu Island	-	KP370792	KP270842	KP270867	-	Kvist et al (2015)
<i>Cephalothrix filiformis</i>	DNA106138	North Sea, Sylt	-	JF293053	JF277593	HQ848617	JF277742	Andrade et al (2012)
<i>Cephalothrix hongkongiensis</i>	DNA106145	Yellow Sea, Qingdao	intertidal	JF293058	JF277590	HQ848615	JF277740	Andrade et al (2012)
<i>Cephalothrix iwatai</i>	IZ-45650	Sea of Japan	2219	KP270800	KP270850	KP270873	-	Kvist et al (2015)
<i>Cephalothrix rufifrons</i>	DNA105613	Irish Sea, Rhos-on-Sea	-	JF293056	JF277592	HQ848604	JF277741	Andrade et al (2012)
<i>Cephalothrix simula</i>		NW Pacific, Akkeshi Bay	-	-	AJ436836	AJ436945	AJ436988	Thollesson & Norenburg (2003)
Tubulanidae	KB2pal7	Kuril-Kamchatka Trench	9577	MN211369	MN211469	MN205494	MN205442	Chernyshev & Polyakova (2019)
Tubulanidae	KB2pal9	Kuril-Kamchatka Trench	8183	MN211371	MN211470	MN205495	MN205444	Chernyshev & Polyakova (2019)
Tubulanidae	KB2pal11	Kuril-Kamchatka Trench	8271	MN211372	MN211471	KP270869	MN205446	Chernyshev & Polyakova (2019)
Tubulanidae	14DS	NW Pacific near Kurile Island	3428	MF512063	MF512038	MF512113	MF512132	Chernyshev & Polyakova (2018a)
Tubulanidae	33DS	Sea of Okhotsk	3350	MF512065	MF512040	MF512115	MF512133	Chernyshev & Polyakova (2018a)
Tubulanidae	4V	Vema Fracture Zone	5085	MF512060	KY296889	KY296909	KY296918	Chernyshev & Polyakova (2018a)
Tubulanidae	6V	Vema Fracture Zone	4986	MF512061	KY296890	KY296911	KY296920	Chernyshev & Polyakova (2018a)
<i>Tubulanus annulatus</i>	DNA105593	North Sea, Sweden	70	JF293060	JF277599	HQ848622	JF277717	Andrade et al (2012)
<i>Tubulanus eozensis</i>	IZ-45552	Sea of Japan, Vostok Bay	-	KP270793	KP270843	KP270868	-	Kvist et al (2015)

<i>Tubulanus pellucidus</i>	DNA105594	NW Atlantic, Pea Island	-	JF293062	JF277595	HQ848625	JF277708	Andrade et al (2012)
<i>Tubulanus polymorphus</i>	DNA105695	NE Pacific, San Juan Island	-	JF293061	JF277598	HQ848621	JF277716	Andrade et al (2012)
<i>Tubulanus punctatus</i>	IZ-45636	Sea of Okhotsk, Kuril Islands	-	KP270799	KP270849	KP270872	-	Kvist et al (2015)
<i>Tubulanus punctatus</i>	DNA105596	NW Pacific, Akkeshi Bay	-	JF293063	JF277597	HQ848624	JF277748	Andrade et al (2012)
<i>Tubulanus rhabdotus</i>		NW Atlantic, Fort Pierce	-	-	AJ436839	AJ436948	AJ436990	Thollesson & Norenburg (2003)
<i>Tubulanus sexlineatus</i>	DNA105628	NE Pacific, Seattle	-	JF292064	JF277596	HQ848623	JF277747	Andrade et al (2012)
<i>Tubulanus</i> sp.	IZ-45559	Sea of Okhotsk, Kuril Islands	-	KP270797	KP270847	KP270870	-	Kvist et al (2015)
HETERONEMERTEA								
Baseodisciniae	7DS	Sea of Okhotsk	3306	MF512070	MF512045	-	MF512138	Chernyshev & Polyakova (2018a)
Baseodisciniae	21DS	Sea of Okhotsk	3300	MF512072	MF512047	-	MF512140	Chernyshev & Polyakova (2018a)
<i>Baseodiscus delineatus</i>	IZ-133729	SW Pacific, Sydney Harbor	2-6	KF935280	KF925448	KF935502	KF935392	Kvist et al (2014)
<i>Baseodiscus mexicanus</i>	IZ-135231	NE Pacific, La Paz	-	KF935281	KF935449	KF935503	KF935393	Kvist et al (2014)
<i>Baseodiscus unicolor</i>	IZ-135323	Caribbean, Bocas del Toro	-	KF935284	KF935451	KF935505	KF935396	Kvist et al (2014)
<i>Cerebratulus leucopsis</i>	IZ-135331	Caribbean, Bocas del Toro	-	KF935300	KF935467	KF935514	KF935412	Kvist et al (2014)
<i>Cerebratulus marginatus</i>	DNA105590	NE Pacific, San Juan Island	-	JF293042	JF277576	HQ848575	JF277729	Andrade et al (2012)
<i>Dushia</i> sp.	KB2het7	Vietnam	intertidal	MN211379	MN211477	MN205499	MN205451	Chernyshev & Polyakova (2019)
<i>Dushia</i> sp.	KB2het8	Vietnam	intertidal	MN211380	MN211478	MN205501	MN205452	Chernyshev & Polyakova (2019)
Heteronemertea	2DS	Sea of Okhotsk	3307	MF512067	MF512042	-	MF512140	Chernyshev & Polyakova (2018a)
Heteronemertea	5DS							
Heteronemertea	IZ-45556	Kuril-Kamchatka Trench	5229	KP270801	KP270851	KP270874	-	Kvist et al (2015)
Lineidae	KB2het4	Sea of Okhotsk	3300	MN211376	MN211474	-	MN205449	Chernyshev & Polyakova (2019)
Lineidae	KB2het5	Kuril-Kamchatka Trench	5229	MN211377	MN211475	MN205498	-	Chernyshev & Polyakova (2019)
Lineidae	KB2het6	Kuril-Kamchatka Trench	4469	MN211378	MN211476	MN205499	MN205450	Chernyshev & Polyakova (2019)
Lineidae	KB2het10	Kuril-Kamchatka Trench	9577	MN211382	MN211480	MN205503	MN205453	Chernyshev & Polyakova (2019)
Lineidae	KB2het11	Kuril-Kamchatka Trench	9577	MN211383	MN211481	MN205504	MN205454	Chernyshev & Polyakova (2019)
Lineidae	3DS	Sea of Okhotsk	3305	MF512068	MF512043	-	MF512136	Chernyshev & Polyakova (2018a)
<i>Lineus acutifrons</i>	DNA107799	NE Atlantic, Galicia	intertidal	JF304778	JF277573	GU590937	JF277727	Andrade et al (2012)
<i>Lineus alborostratus</i>		Sea of Japan, Vostok Bay	-	-	AJ436822	AJ436932	AJ436979	Thollesson & Norenburg (2003)
<i>Lineus lacteus</i>	IZ-135373	Mediterranean, Almeria	-	KF935302	KF935469	KF935519	KF935414	Kvist et al (2014)
<i>Lineus sanguineus</i>		Irish Sea, Anglesey	-	-	AJ436828	AJ436938	AJ436982	Thollesson & Norenburg (2003)

<i>Lineus torquatus</i>	DNA105828	NW Pacific, Akkeshi Bay	-	JF293035	JF277572	HQ848574	JF277730	Andrade et al (2012)
<i>Lineus viridis</i>	DNA106128	North Sea, Sylt	intertidal	JF293032	JF277582	HQ848579	JF277719	Andrade et al (2012)
<i>Macaulaura alaskensis</i>		NE Pacific, San Juan Island	-	-	AJ436827	AJ436937	AJ436981	Thollesson & Norenburg (2003)
<i>Micrura bathyalis</i>	KB2het9	Sea of Japan	3347	MN211381	MN211479	MN205502	-	Chernyshev & Polyakova (2019)
<i>Micrura callima</i>	KB2het2	Guam Island	1	MN211374	MN211472	MN205496	MN205447	Chernyshev & Polyakova (2019)
<i>Micrura chlorapardalis</i>	IZ-132530	Caribbean, Bocas del Toro	-	KF935292	KF935459	KF935512	KF935404	Kvist et al (2014)
<i>Micrura dellechiaiei</i>	IZ-132745	Mediterranean, Isla Alboran	-	KF935294	KF935461	KF935514	KF935406	Kvist et al (2014)
<i>Micrura fasciolata</i>	DNA105591	North Sea, Sweden	40	JF293038	JF277585	HQ848577	JF277721	Andrade et al (2012)
<i>Micrura fasciolata</i>	DNA105621	North Sea, Sweden	10	JF293039	JF277586	HQ848578	JF277720	Andrade et al (2012)
<i>Micrura ignea</i>	DNA103892	Caribbean, Bocas del Toro	-	JF293043	JF277588	HQ848587	JF277734	Andrade et al (2012)
<i>Micrura ignea</i>	IZ-133720	Caribbean, Bocas del Toro	-	KF935286	KF935453	KF935506	KF935398	Kvist et al (2014)
<i>Micrura ignea</i>	IZ-135349	Caribbean, Bocas del Toro	-	KF935287	KF935454	KF935507	KF935399	Kvist et al (2014)
<i>Micrura purpurea</i>	DNA105619	North Sea, Sweden	40	JF293036	JF277577	HQ848586	JF277726	Andrade et al (2012)
<i>Micrura rubramaculosa</i>	IZ-132531	Caribbean, Bocas del Toro	-	KF935293	KF935460	KF935513	KF935405	Kvist et al (2014)
<i>Micrura verrilli</i>	IZ-134451	NE Pacific, Aiki Beach	-	KF935288	KF935455	KF935508	KF935400	Kvist et al (2014)
<i>Nippomicrura uchidai</i>	KB2het1	Sea of Japan, Vostok Bay	5	MN211373	KU821519	KY561815	KY561819	Chernyshev & Polyakova (2019)
<i>Notospermus geniculatus</i>	IZ-132741	Mediterranean, Cabrera	-	KF935295	KF935462	-	KF935407	Kvist et al (2014)
<i>Parborlasia corrugatus</i>	DNA105584	Antarctica, Palmer Archipelago	600	JF293037	JF277578	-	JF277732	Andrade et al (2012)
<i>Parborlasia corrugatus</i>		Antarctica, McMurdo Sound	-	-	AJ436829	AJ436939	AJ436983	Thollesson & Norenburg (2003)
<i>Riseriellus occultus</i>	DNA105611	Irish Sea, Rhos-on-Sea	-	JF293033	JF277580	HQ848582	JF277723	Andrade et al (2012)
<i>Sonnenemertes cantelli</i>	8DS	Sea of Okhotsk	3306	MF512071	MF512046	MF512117	MF512139	Chernyshev & Polyakova (2018a)
<i>Sonnenemertes cantelli</i>	22DS	NW Pacific	3517	MF512073	MF512048	MF512118	MF512141	Chernyshev & Polyakova (2018a)
<i>Sonnenemertes cantelli</i>	31DS	NW Pacific	3580	MF512074	MF512049	-	MF512142	Chernyshev & Polyakova (2018a)
<i>Sonnenemertes cantelli</i>	38DS	Sea of Okhotsk	3365	MF512075	-	MF512119	MF512143	Chernyshev & Polyakova (2018a)
<i>Sonnenemertes cantelli</i>	42DS	NW Pacific	3374	MF512077	MF512051	MF512120	MF512145	Chernyshev & Polyakova (2018a)
<i>Zygeupolia rubens</i>	DNA105580	NW Atlantic, Fort Pierce	-	JF293045	JF277574	HQ848585	JF277735	Andrade et al (2012)

HOPLOMERTEA – POLYSTILIFERA

Armaueriidae	KB2hop9	Kuril-Kamchatka Trench	1000-500	MN211391	MN211488	-	MN205463	Chernyshev & Polyakova (2019)
Armaueriidae	KB2hop10	Kuril-Kamchatka Trench	3000-1000	MN211392	MN211489	-	MN205464	Chernyshev & Polyakova (2019)
Drepanophoridae	KB2hop2	Vietnam	5-8	MN211385	MN211483	-	MN205456	Chernyshev & Polyakova (2019)

Drepanophoridae	KB2hop3	Vietnam	5-8	MN211386	MN211484	-	MN205457	Chernyshev & Polyakova (2019)
<i>Drepanophorus spectabilis</i>	DNA105587	Mediterranean, Blanes	16	JF293009	JF277627	HQ848610	JF277710	Andrade et al (2012)
Eureptantia	KB2hop1	Vietnam	6	MN211384	MN211482	-	MN205455	Chernyshev & Polyakova (2019)
<i>Nectonemertes mirabilis</i>	10DS	NW Pacific	3400-0	MF512081	-	MF512122	MF512148	Chernyshev & Polyakova (2018a)
<i>Nectonemertes mirabilis</i>	18DS	Sea of Okhotsk	2000-0	MF512083	MF212055	MF512124	MF512150	Chernyshev & Polyakova (2018a)
<i>Nectonemertes mirabilis</i>	20DS	NW Pacific	2000-0	MF512084	MF512056	MF512125	MF512151	Chernyshev & Polyakova (2018a)
<i>Nectonemertes mirabilis</i>	24DS	Kuril-Kamchatka Trench	3000-1000	MF512085	MF512057	MF512126	MF512152	Chernyshev & Polyakova (2018a)
<i>Nectonemertes mirabilis</i>		NE Pacific, off Point Conception	-	-	AJ436815	AJ436925	AJ436973	Thollesson & Norenburg (2003)
<i>Paradrepanophorus crassus</i>	DNA104800	NE Atlantic, Galicia	2	JF293008	JF277628	HQ848603	JF277711	Andrade et al (2012)
<i>Pelagonemertes</i> sp.	545	NE Pacific, off Point Conception	-	-	AJ436814	AJ436924	AJ436972	Thollesson & Norenburg (2003)
<i>Phallonemertes murrayi</i>		NE Pacific, off Point Conception	-	-	AJ436816	AJ436926	AJ436974	Thollesson & Norenburg (2003)
<i>Protopelagonemertes beebei</i>	34DS	Kuril-Kamchatka Trench	5379-0	MF512087	MF512059	-	MF512153	Chernyshev & Polyakova (2018a)
<i>Protopelagonemertes beebei</i>	DNA106132	NW Pacific, Sagami Bay	1300-200	JF293028	JF277629	HQ848602	JF277752	Andrade et al (2012)
<i>Protopelagonemertes</i> sp.	544	NE Pacific, off Point Conception	-	-	AJ436817	AJ436927	AJ436975	Thollesson & Norenburg (2003)
Reptantia	KB2hop4	Sea of Okhotsk, Kuril Islands	500-550	KP270803	KP270853	KP270876	MN205458	Chernyshev & Polyakova (2019)
Reptantia	KB2hop5	Sea of Okhotsk	3307	MN211387	MN211485	MN205505	MN205459	Chernyshev & Polyakova (2019)
Reptantia	KB2hop6	Kuril-Kamchatka Trench	8087	MN211388	MN211486	MN205506	MN205460	Chernyshev & Polyakova (2019)
Reptantia	KB2hop7	Kuril-Kamchatka Trench	7180	MN211389	-	-	MN205461	Chernyshev & Polyakova (2019)
Reptantia	KB2hop8	Kuril-Kamchatka Trench	8189	MN211390	MN211487	MN205507	MN205462	Chernyshev & Polyakova (2019)
Reptantia	DNA100544	Caribbean, Exuma Cays	-	JF293055	JF277626	HQ848632	JF277712	Andrade et al (2012)
Reptantia	IZ-132526	Caribbean, Bocas del Toro	-	KF935305	KF935472	KF935522	KF935416	Kvist et al (2014)
Reptantia	IZ-133024	Caribbean, Bocas del Toro	1671	KF935306	KF935473	KF935523	KF935417	Kvist et al (2014)
Reptantia	281	Caribbean Sea, Carrie Bow Cay	-	-	AJ436818	AJ436928	AJ436976	Thollesson & Norenburg (2003)
Reptantia	481	East China Sea, Okinawa	-	-	AJ436819	AJ436929	AJ436977	Thollesson & Norenburg (2003)
HOPLONEMERTEA – MONOSTILIFERA								
<i>Abyssonemertes kajiharai</i>	1V	Vema Fracture Zone	5514	KY296892	KY296888	KY296906	KY296915	Chernyshev & Polyakova (2018b)
<i>Amphiporus angulatus</i>		NW Atlantic, Cobscook	-	-	AJ436786	AJ436896	AJ436950	Thollesson & Norenburg (2003)
<i>Amphiporus formidabilis</i>	IZ-134452	NE Pacific, San Juan Island	-	KF935331	KF935498	KF935547	KF935443	Kvist et al (2014)
<i>Amphiporus imparispinosus</i>	KB2hop34	Sea of Japan, Vostok Bay	intertidal	MN211414	MN211508	MN205525	MN205486	Chernyshev & Polyakova (2019)
<i>Amphiporus imparispinosus</i>	DNA106137	NE Pacific, San Juan Island	intertidal	JF293029	JF277618	HQ848612	JF277696	Andrade et al (2012)

<i>Amphiporus lactifloreus</i>	KB2hop37	White Sea	intertidal	MN211417	MN211511	MN205528	MN205488	Chernyshev & Polyakova (2019)
<i>Amphiporus lactifloreus</i>	DNA103901	Irish Sea, Penmon	intertidal	JF293018	JF277617	HQ848611	-	Andrade et al (2012)
<i>Antarctonemertes dilutebasisae</i>	KB2hop15	Sea of Japan, Peter the Great Bay	1	MN211397	MN211494	MN205511	-	Chernyshev & Polyakova (2019)
<i>Antarctonemertes phyllospadicola</i>	KB2hop14	Canada, BMS	intertidal	MN211396	MN211493	FJ594419	MN205468	Chernyshev & Polyakova (2019)
<i>Antarctonemertes riesgoae</i>	IZ-134229	Antarctica, Deception Island	2	KF935322	KF935490	KF935538	KF935434	Kvist et al (2014)
<i>Antarctonemertes valida</i>	IZ-134228	Antarctica, Deception Island	2	KF935321	KF935489	KF935537	KF935433	Kvist et al (2014)
<i>Argonemertes australiensis</i>	DNA105574	Tasmania	-	JF293010	JF277605	HQ848601	JF277750	Andrade et al (2012)
<i>Argonemertes australiensis</i>	IZ-135315	Tasmania	-	KF935309	KF935476	KF935524	KF935419	Kvist et al (2014)
<i>Asteronemertes</i> sp.	KB2hop24	Sea of Okhotsk, Kuril Islands	97-108	MN211406	MN211500	MN205519	MN205477	Chernyshev & Polyakova (2019)
Cratenemertidae	KB2hop11	Guam Island	1	MN211393	MN211490	MN205508	MN205465	Chernyshev & Polyakova (2019)
<i>Diplomma serpentina</i>	KB2hop18	Guam Island	1	MN211400	-	MN205514	MN205471	Chernyshev & Polyakova (2019)
<i>Emplectonema buergeri</i>	DNA10567	NE Pacific, Seattle	-	JF293066	JF277616	HQ848600	JF277697	Andrade et al (2012)
<i>Emplectonema gracile</i>	DNA10615	Irish Sea, Crosby	-	JF293022	JF277621	HQ848620	JF277751	Andrade et al (2012)
Eumonostilifera	2V	Vema Fracture Zone	5085	KY296893	-	KY296907	KY296916	Chernyshev & Polyakova (2018b)
Eumonostilifera	5V	Vema Fracture Zone	5119	KY296894	-	KY296910	KY296919	Chernyshev & Polyakova (2018b)
<i>Galathenemertes giribeti</i>	KB2hop19	Kuril-Kamchatka Trench	7256	MN211401	-	MN205515	MN205472	Chernyshev & Polyakova (2019)
<i>Galathenemertes giribeti</i>	KB2hop20	Kuril-Kamchatka Trench	7256	MN211402	MN211497	MN205516	MN205473	Chernyshev & Polyakova (2019)
<i>Geonemertes pelaensis</i>	DNA102574	Bermuda	-	JF293017	JF277610	HQ848592	JF277736	Andrade et al (2012)
<i>Gononemertes parasita</i>	DNA105583	North Sea, Sweden	15	JF293014	JF277606	HQ848607	JF277745	Andrade et al (2012)
<i>Gononemertes</i> sp.	KB2hop21	Sea of Okhotsk	3347	MN211403	MN211498	MN205517	MN205474	Chernyshev & Polyakova (2019)
<i>Gononemertes</i> sp.	KB2hop22	Sea of Okhotsk	3305	MN211404	MN211499	MN205518	MN205475	Chernyshev & Polyakova (2019)
<i>Gononemertes</i> sp.	6DS	Sea of Okhotsk	3306	MF512079	MF512052	-	MF512146	Chernyshev & Polyakova (2018a)
<i>Gononemertes</i> sp.	IZ-45558	Kuril-Kamchatka Trench	-	KP270805	KP270855	KP270878	-	Kvist et al (2015)
<i>Gurjanovella</i> sp.	11DS	NW Pacific	3400-0	MF512082	MF512054	MF512123	MF512149	Chernyshev & Polyakova (2018a)
<i>Leptonemertes chalicophora</i>	DNA106131	NW Atlantic, Fort Pierce	-	JF293011	JF277608	HQ848596	-	Andrade et al (2012)
<i>Malacobdella grossa</i>	DNA105592	North Sea, Sweden	20	JF293015	JF277614	HQ848591	JF277700	Andrade et al (2012)
Monostilifera	KB2hop30	Kuril-Kamchatka Trench	5741	MN211410	MN211504	-	MN205482	Chernyshev & Polyakova (2019)
<i>Nemertopsis bivittata</i>	DNA106135	NW Atlantic, Pawleys Islands	intertidal	JF293021	JF277609	HQ848608	JF277701	Andrade et al (2012)
<i>Nemertovema hadalis</i>	8V	Puerto Rico Trench	8339	KY296895	KY296891	KY296912	KY296921	Chernyshev & Polyakova (2018b)
<i>Nemertovema norenburgi</i>	KB2hop32	Kuril-Kamchatka Trench	8271	MN211412	MN211506	MN205523	MN205484	Chernyshev & Polyakova (2019)
<i>Nemertovema norenburgi</i>	KB2hop33	Kuril-Kamchatka Trench	8221	MN211413	MN211507	MN205524	MN205485	Chernyshev & Polyakova (2019)

<i>Nipponnemertes arenaria</i>	KB2hop12	Sea of Japan, Vostok Bay	15	MN211394	MN211491	MN205509	MN205466	Chernyshev & Polyakova (2019)
<i>Nipponnemertes bimaculata</i>	KB2hop13	Sea of Japan, Vostok Bay	5	MN211395	MN211492	MN205510	MN205467	Chernyshev & Polyakova (2019)
<i>Nipponnemertes pulchra</i>	DNA105577	North Sea, Sweden	50	JF293012	JF277625	HQ848597	JF277704	Andrade et al (2012)
<i>Oerstedia oculata</i>	KB2hop16	Sea of Japan, Peter the Great Bay	1	MN211398	MN211495	MN205512	MN205469	Chernyshev & Polyakova (2019)
<i>Oerstedia phoresiae</i>	KB2hop17	Sea of Japan, Peter the Great Bay	1	MN211399	MN211496	MN205513	MN205470	Chernyshev & Polyakova (2019)
<i>Ototyphlonemertes correae</i>	DNA106134	North Sea, Sweden	-	JF293025	JF277612	HQ848613	JF277706	Andrade et al (2012)
<i>Ototyphlonemertes macintoshi</i>	DNA106133	NE Atlantic, Praia do Mindelo	-	JF293024	JF277613	HQ848605	JF277707	Andrade et al (2012)
<i>Ototyphlonemertes pallida</i>	IZ-133745	NE Atlantic, Mindelo	-	KF935329	KF935496	KF935545	KF935441	Kvist et al (2014)
<i>Paranemertes peregrina</i>	KB2hop35	Sea of Japan, Spokoinaya bight	intertidal	MN211415	MN211509	MN205526	-	Chernyshev & Polyakova (2019)
<i>Paranemertes peregrina</i>		NE Pacific, San Juan Island	-	-	AJ436805	AJ436915	AJ436963	Thollesson & Norenburg (2003)
<i>Paranemertes sanjuanensis</i>		NE Pacific, San Juan Island	-	-	AJ436807	AJ436917	AJ436965	Thollesson & Norenburg (2003)
<i>Paranemertes</i> sp.	249	NE Pacific, San Juan Island	-	-	AJ436806	AJ436916	AJ436964	Thollesson & Norenburg (2003)
Plectonemertidae	IZ-25166	Australia, Pilbara Region	-	KF935310	KF935477	KF935526	KF935421	Kvist et al (2014)
Plectonemertidae	IZ-25169	Australia, Pilbara Region	-	KF935312	KF935479	KF935528	KF935422	Kvist et al (2014)
<i>Poseidonemertes collaris</i>		NE Pacific, Bodega Bay	-	-	AJ436809	AJ436919	AJ436967	Thollesson & Norenburg (2003)
<i>Poseidonemertes maslakovae</i>	IZ-45640	Sea of Japan, Vostok Bay	-	KP270806	KP270856	KP270879	-	Kvist et al (2015)
<i>Potamonemertes percivali</i>	IZ-25172	New Zealand, Rangitata River	-	KF935316	KF935483	KF935532	KF935426	Kvist et al (2014)
<i>Proamphiporus crandalli</i>	KB2hop31	Kuril-Kamchatka Trench	5496	MN211411	MN211505	MN205522	MN205483	Chernyshev & Polyakova (2019)
<i>Proamphiporus kaimeiae</i>		NW Pacific, off Tohoku	-	LC520132	LC505452	LC505451	LC520133	Hookabe et al. (2020)
<i>Prosorhochmus americanus</i>	DNA105665	NW Atlantic, Rudee Inlet	intertidal	JF293023	JF277619	HQ848595	JF277698	Andrade et al (2012)
<i>Prosorhochmus nelsoni</i>	DNA105586	SE Pacific, Coquimbo	intertidal	JF293013	JF277604	HQ848606	JF277744	Andrade et al (2012)
<i>Prostoma eilhardi</i>	DNA103928	USA, Concord	-	JF293027	JF277620	HQ848594	JF277695	Andrade et al (2012)
<i>Psammamphiporus elongatus</i>	DNA106136	NE Atlantic, Galicia	intertidal	JF293026	JF277622	HQ848609	JF277702	Andrade et al (2012)
<i>Pseudotetrastemma</i> sp.	KB2hop25	Sea of Japan, Peter the Great Bay	intertidal	MN211407	MN211501	MN205520	-	Chernyshev & Polyakova (2019)
<i>Sacconemertopsis belogurovi</i>	KB2hop27	Sea of Japan, Vostok Bay	intertidal	KP270811	KP270861	KP270884	MN205479	Chernyshev & Polyakova (2019)
<i>Tetrastemma candidum</i>	G6	NW Atlantic, Maine	-	MZ231218	MZ231152	MZ216540	MZ216610	Chernyshev et al (2021)
<i>Tetrastemma coronatum</i>	B4	Mediterranean, Italy	-	MZ231220	MZ231154	MZ216542	MZ216612	Chernyshev et al (2021)
<i>Tetrastemma elegans</i>		NW Atlantic, Nahant	-	-	AJ436810	AJ436920	AJ436968	Thollesson & Norenburg (2003)
<i>Tetrastemma elegans</i>	B2	NW Atlantic, Virginia	-	MZ231222	MZ231156	MZ216543	MZ216614	Chernyshev et al (2021)
<i>Tetrastemma enteroplecta</i>	A6	NW Atlantic, Florida	-	MZ231225	MZ231159	MZ216545	MZ216616	Chernyshev et al (2021)
<i>Tetrastemma merulum</i>	F2	NW Atlantic, Florida	-	MZ231231	MZ231163	MZ216550	MZ216622	Chernyshev et al (2021)

<i>Tetrastemma nigrifrons</i>	A9	NE Pacific, California	-	MZ231211	MZ231146	MZ216533	MZ216603	Chernyshev et al (2021)
<i>Tetrastemma nigrifrons</i>	E1	Canada	-	MZ231208	MZ231143	MZ216530	MZ216600	Chernyshev et al (2021)
<i>Tetrastemma nigrifrons</i>	24Qul	Sea of Okhotsk	-	MZ231206	MZ231141	MZ216528	MZ216598	Chernyshev et al (2021)
<i>Tetrastemma nigrifrons</i>	25Qul	Sea of Okhotsk	-	MZ231207	MZ231142	MZ216529	MZ216599	Chernyshev et al (2021)
<i>Tetrastemma pimaclatum</i>	F6	Sea of Japan, Russia	-	MZ231237	MZ231167	MZ216555	MZ216628	Chernyshev et al (2021)
<i>Tetrastemma pseudocoronatum</i>	KB2hop26	Sea of Japan, Vostok Bay	intertidal	MN211408	MN211502	MN205521	MN205478	Chernyshev & Polyakova (2019)
<i>Tetrastemma reticulatum</i>	H8	NE Pacific, California	-	MZ231238	MZ231168	MZ216556	MZ216629	Chernyshev et al (2021)
<i>Tetrastemma roseocephalum</i>	TrJ	South Korea, Jeju Island	-	MZ231239	MZ231169	MZ216557	MZ216630	Chernyshev et al (2021)
<i>Tetrastemma sp.</i>	IZ-132742	Mediterranean, Cabrera	0	KF935325	KF935492	KF935541	KF935437	Kvist et al (2014)
<i>Tetrastemma sp.</i>	D7	Gulf of Mexico	-	MZ231248	MZ231175	-	MZ216639	Chernyshev et al (2021)
<i>Tetrastemma sp.</i>	Tsl1	Kuril Islands, Russia	-	MZ231252	MZ231179	-	MZ216643	Chernyshev et al (2021)
<i>Tetrastemma sp.</i>	1TJS	Kuril Islands, Russia	-	MZ231256	MZ231182	MZ216570	MZ216647	Chernyshev et al (2021)
<i>Tetrastemma sp.</i>	3TJS	Kuril Islands, Russia	-	MZ231257	MZ231183	MZ216571	MZ216648	Chernyshev et al (2021)
<i>Tetrastemma sp.</i>	7 Tsl	Kuril Islands, Russia	-	MZ231253	MZ231180	MZ216567	MZ216644	Chernyshev et al (2021)
<i>Tetrastemma sp.</i>	13TsU	Kuril Islands, Russia	-	MZ231263	MZ231185	MZ216577	MZ216654	Chernyshev et al (2021)
<i>Tetrastemma stimpsoni</i>	KB2hop29	Sea of Japan, Vostok Bay	intertidal	KP270812	KP270862	KP270885	MN205481	Chernyshev & Polyakova (2019)
<i>Tetrastemma stimpsoni</i>	C8	Japan	-	MZ231212	MZ231147	MZ216534	MZ216604	Chernyshev et al (2021)
<i>Tetrastemma vermiculum</i>	A4	France	-	MZ231270	MZ231190	MZ216583	MZ216661	Chernyshev et al (2021)
<i>Tetrastemma vittigerum</i>	IZ-25171	Mediterranean, Cabrera	-	KF935324	-	KF935540	KF935436	Kvist et al (2014)
<i>Tetrastemma vittigerum</i>	IZ-132742	Mediterranean, Cabrera	0	KF935323	KF935491	KF935539	KF935435	Kvist et al (2014)
<i>Tetrastemma vittigerum</i>	H3	France	-	MZ231272	MZ231192	MZ216585	MZ216663	Chernyshev et al (2021)
<i>Tetrastemma wilsoni</i>		Edgewater	-	-	AJ436811	AJ436921	AJ436969	Thollesson & Norenburg (2003)
Tetrastemmatidae	IZ-132537	Mediterranean, Cabrera	-	KF935326	KF935493	KF935542	KF935438	Kvist et al (2014)
<i>Tortus tokmakovae</i>	KB2hop36	Sea of Japan, Peter the Great Bay	intertidal	MN211416	MN211510	MN205527	MN205487	Chernyshev & Polyakova (2019)
<i>Vieitezia luzmurubeae</i>	DNA104801	NE Atlantic, Galicia	-	HQ443428	JF277607	HQ443426	JF277746	Andrade et al (2012)
<i>Vieitezia luzmurubeae</i>	IZ-133740	NE Atlantic, Ribeira	-	KF935328	KF935495	KF935544	KF935440	Kvist et al (2014)
<i>Zygonemertes simonae</i>		NW Atlantic, Fort Pierce	-	-	AJ436812	AJ436922	AJ436970	Thollesson & Norenburg (2003)
<i>Zygonemertes sp.</i>	KB2hop28	Sea of Japan, Vostok Bay	intertidal	MN211409	MN211503	-	MN205480	Chernyshev & Polyakova (2019)
<i>Zygonemertes virescens</i>	DNA105575	NW Atlantic, Fort Pierce	-	JF293016	JF277615	HQ848590	JF277694	Andrade et al (2012)

Supplementary Table 3 Best-fitting substitution models for all included genes and the three codon positions (for COI and H3) as calculated by PartitionFinder. Models are presented for each of the four super matrices.

Gene marker	Palaeonemertea	Heteronemertea	Polystilifera	Monostilifera
18S	GTR+G+I	GTR+G+I	GTR+G+I	GTR+G+I
16S	GTR+G+I	GTR+G+I	GTR+G+I	GTR+G+I
COI_1	GTR+G+I	GTR+G+I	GTR+G+I	GTR+G+I
COI_2	GTR+G	GTR+G+I	GTR+G+I	GTR+G+I
COI_3	GTR+G+I	GTR+G	HKY+G+I	GTR+G
H3_1	GTR+G+I	HKY+G+I	HKY+G+I	GTR+G+I
H3_2	SYM	JC+I	HKY+G+I	SYM+G+I
H3_3	GTR+G+I	HKY+G+I	JC+I	GTR+G+I