

**Table S1.** List of species analyzed in this study with their GenBank accession numbers.

Order	Family	Species	Size (bp)	Accession no.
Mytiloida	Mytilidae	<i>Bathymodiolus aduloides</i>	17243	MT916741
		<i>Bathymodiolus azoricus</i>	17598	MT916742
		<i>Bathymodiolus brooksi</i>	17728	MT916743
		<i>Gigantidas childressi</i>	17637	MT916744
		<i>Bathymodiolus japonicus</i>	17510	AP014560
		<i>Bathymodiolus sp.</i>	18376	MT916740
		<i>Bathymodiolus septemdierum</i>	17069	AP014562
		<i>Brachidontes exustus</i>	16600	NC_024882
		<i>Crenomytilus grayanus</i>	17582	NC_044128
		<i>Gigantidas haimaensis</i>	18283	MT916746
		<i>Gigantidas platifrons</i>	17653	AP014561
		<i>Gregariella coralliophaga</i>	16273	NC_044129
		<i>Modiolus kurilensis</i>	16210	KY242717
		<i>Modiolus modiolus</i>	15816	NC_033537
		<i>Modiolus nipponicus</i>	15638	NC_044130
		<i>Modiolus philippinarum</i>	16389	NC_035422
		<i>Modiolus comptus</i>	15591	MN602036
		<i>Arcuatula senhousia</i>	20612	NC_014590
		<i>Mytella strigata</i>	16302	NC_056377
		<i>Mytilus californianus</i>	16730	GQ527172
		<i>Mytilus unguiculatus</i>	16642	NC_024733
		<i>Mytilus edulis</i>	16745	MF407676
		<i>Mytilus galloprovincialis</i>	16780	FJ890849
		<i>Mytilus trossulus</i>	18628	HM462080
		<i>Mytilus chilensis</i>	16765	NC_030633
		<i>Perna canaliculus</i>	16004	NC_054242
		<i>Perna perna</i>	16100	MT588202
		<i>Perna viridis</i>	16014	NC_018362
		<i>Perumytilus purpuratus</i>	16986	MH330333
		<i>Semimytilus patagonicus</i>	24347	MT026713
		<i>Mytilisepta virgata</i>	14713	ON193524
		<i>Mytilisepta keenae</i>	15902	MK721542
		<i>Geukensia demissa</i>	15838	MN449487
		<i>Xenostrobus securis</i>	18145	NC_028706
		<i>Bathymodiolus puteoserpentis</i>	20482	NC_068738
		<i>Brachidontes pharaonis</i>	20066	NC_064131
		<i>Gigantidas vrijenhoeki</i>	17786	NC_068739
		<i>Modiolus modulaides</i>	15422	NC_067876
Ostreida	Pinnidae	<i>Atrina pectinata</i>	16811	NC_020028
	Ostreidae	<i>Ostrea lurida</i>	16344	NC_022688
		<i>Ostrea denselamellosa</i>	16277	NC_015231
		<i>Ostrea edulis</i>	16320	JF274008
		<i>Magallana hongkongensis</i>	18617	MZ337404
		<i>Magallana gigas</i>	18224	NC_001276
		<i>Magallana nippona</i>	20030	NC_015248
		<i>Magallana iredalei</i>	22446	NC_013997
		<i>Crassostrea sp.</i>	22040	NC_018763
		<i>Crassostrea virginica</i>	17244	AY905542

		<i>Magallana belcheri</i>	21020	MH051332
		<i>Saccostrea</i> sp.	16285	KU310921
		<i>Saccostrea cucullata</i>	16396	NC_027724
		<i>Saccostrea kegaki</i>	16260	NC_030533
		<i>Saccostrea echinata</i>	16281	NC_036478
		<i>Saccostrea glomerata</i>	16282	NC_036483
		<i>Saccostrea mordax</i>	16532	NC_013998
		<i>Saccostrea mytiloides</i>	16282	NC_036479
	Margaritidae	<i>Pinctada imbricata</i>	31435	KX669229
		<i>Pinctada maxima</i>	16994	GQ452847
	Pteriidae	<i>Pteria penguin</i>	17344	KU552127
Pectinida	Pectinidae	<i>Argopecten purpuratus</i>	16270	NC_027943
		<i>Argopecten irradians</i>	16211	NC_009687
		<i>Mimachlamys crassicostata</i>	17963	NC_011608
		<i>Placopecten magellanicus</i>	32115	NC_007234
		<i>Mimachlamys sanguinea</i>	17383	KF214684
		<i>Amusium pleuronectes</i>	18044	MT419374
		<i>Argopecten ventricosus</i>	16079	KT161261
Arcoida	Arcidae	<i>Anadara sativa</i>	48161	NC_024927
		<i>Anadara kagoshimensis</i>	46713	KF750628
		<i>Tegillarca granosa</i>	31589	NC_026081
		<i>Anadara vellicata</i>	34147	KP954700
	Cucullaeidae	<i>Cucullaea labiata</i>	25845	KP091889
Adapedonta	Hiatellidae	<i>Panopea globosa</i>	15469	NC_025636
		<i>Panopea abrupta</i>	15381	NC_033538