**Figure S1** Alignment of the complete mitochondrial DNA sequences of *Acanthaster planci* (specimen’s name, M2), *Linckia laevigata* (specimen’s name, Ishigaki-11) and *Asterias amurensis* (specimen’s name, A1), each of which was determined by the whole-genome shotgun method (this study), and *Acanthaster planci* (accession number, NC\_007781.1) determined by primer-based long PCR method. NC\_007781.1 nucleotide sequences marked by red (39 sites) differ from sequences of the upper three species. We thought that these are mis-readings caused by the PCR method.

4 17144 |-> tRNA-Phe tRNA-Phe ->||-> 12S rRNA

Acanthaster\_M2 GCAAAGATAGCTTAACAGA-AAAGCAAAGCACTGAAAACGCTTAAATAAAGGTTCGAGTCCTTTTCTTAGCAACCGATTTGGTCCTAGTC

Linckia\_Ishigaki-11 ..................GC..................T...A.C.....................C.......A...............

Asterias\_A1 ...............T...T..................T...CC..........AA..................A...............

Acanthaster\_NC\_007788.1 ...................-......................................................................

Acanthaster\_M2 CTTCCCTCAACTTTCTCCAGGATGATACATGCAAACCCCTAAGTTCTACGGTGAGCTCAATCTGCTTCTGGCCTCTTCCAAGACACCAGA

Linckia\_Ishigaki-11 ...ATT.TG...CC...T.AA.............G.TAA.C-.CGT...C.....--T...ACAAA.T.TA.T.A.CTT..T.GCAA..T

Asterias\_A1 T..TTA.T....C....T.TAG............G..TT.TG.CAAC..T.....--T...G.CAGGA.AATTATC.TT-----TAG...

Acanthaster\_NC\_007788.1 .........................................................................................G

Acanthaster\_M2 ACACTAAAAATAGCATCAGGCACCATTCCTCGTAGCCCAAGACGCTAAGGCCTACCCAAACAAAGATAGCCCACACCTGC-AGTACTTGA

Linckia\_Ishigaki-11 .A.A.T.T..G.........A.T--AAA..AACCT.TA.C......T..A-----------------.......GT....-.......A.

Asterias\_A1 TAG.CCTC.....T.....AATT--..A.CA.A.T.-A.....A..T..A-----------------CA......A....-.........

Acanthaster\_NC\_007788.1 ................................................................................A.........

Acanthaster\_M2 CATTACACAATAAGCGCTAGCTTGATGCAGCCATAGAGAAAA-AAACCGGTAAATTATGTGCCAGCCACCGCGGTTATACATAAGATTTT

Linckia\_Ishigaki-11 T...GTG........AAA.......CA...TT........C.-GG..T.......................................CC.

Asterias\_A1 A....T..........AA.A......AT..TA..........C.TT.....T.................................G.AA.

Acanthaster\_NC\_007788.1 ................................G.........-...............................................

Acanthaster\_M2 AGTTG--AGGGCCTCGGTAAAAAGGTGATAAAAAT-------------GCACCAGAGTCCTCGCCCCCTCAAGCAGTAATAAGCTAACAG

Linckia\_Ishigaki-11 ...CAA-.AATTAC...C.T...A...G.T.GG.AAACTTTAAGCTTAATTT..A...GAA.A.TAAT.TC................T.A

Asterias\_A1 ..C.AAT.AAA.A.G.TA.....T...G...G..CTAGTAAAAG--------T.A.A.AAAGATG.....T...................

Acanthaster\_NC\_007788.1 .....--............................-------------..........................................

Acanthaster\_M2 GAC---CCTAAGAACTATTCCACCAAACCCTGCCCTACCCA-----AACCCTTGATATTTATCACCAAAGCTCAAAGATAAACTGGGATT

Linckia\_Ishigaki-11 A..---AT.T.T...A.C.AT.ATT.GA.T.TGAA...TTTATCCG..A..-----------...T..........A.............

Asterias\_A1 A..TTAAG.T.C..TG.CAA..AT...ATT.TA...T.T.T-----C....-----------...T.......TG.C.............

Acanthaster\_NC\_007788.1 ...---...................................-----............................................

Acanthaster\_M2 AGATACCCCATTATATGAGCCCTAAAACAACCTAAACACCTGAGAACTACGAAC-AAGAGTTTAAAACTCAAAGGACTTGGCGGTTTTCC

Linckia\_Ishigaki-11 ...................T.G.-T.....TAAG..TG..A.............TC.C.A............................TT

Asterias\_A1 ..........C....G....TA.-...AC...ACTT....C...........G.-G.A..C............................T

Acanthaster\_NC\_007788.1 ......................................................-...................................

Acanthaster\_M2 AGACCTCCCTGGAGGAGCTTGCTATCTAACCGATAACCCACGAAATACCTCACCAGCCTTTGCAAACCGCAGCCTGTATACCATCGTCGT

Linckia\_Ishigaki-11 ......T...............C..TG............G...G.A............C...A.GTAGA....T................

Asterias\_A1 .ATT..T............................GT.....T..C....T......T....A.T.AAA.....................

Acanthaster\_NC\_007788.1 ........T.................................................................................

Acanthaster\_M2 CAGTCTACCCTTTAAAGACAGTATACTGAATGGAATAAATTGTTATATCTCCTCTACGTCAGATCGAGGTGCAGCTCATAAGCTGGGGAT

Linckia\_Ishigaki-11 ....T....TC.C..GA.A....C...C..A.A....TTG---------.T.AT....................T.A..GG......A..

Asterias\_A1 ....T...TTCCCG.GA.AT...A..AA..G.A.T...TAAA------..T..TG.....................A.....T.......

Acanthaster\_NC\_007788.1 ..................................G.......................................................

Acanthaster\_M2 AAGTGAGCTACAATAACTAACTAACAGGCCCTCTAAACCAAGATATGGACAAGCCCATGAAAACCGGGACTCAAAACAGGATTCAGCAGT

Linckia\_Ishigaki-11 G...............T....C.CA.T----.AA..GTAT.AT.C....A..TTTTT.......AAA.GT.TG...T.............

Asterias\_A1 ..............T.TAG.GAT.A..----.TA.....T.T..C..A.T..CGGAC...T..-GCCCGT.TG.................

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AACGCCTA-ACAGAGAATAGGTGTGAAGCA----CACAGCTCTGGAATGCGCACACATCGCCCGTCACTCTCGTCCA-CAGAGGAGAAAA

Linckia\_Ishigaki-11 ..TA.T..C.....A.......A......-------.......AA...............................TAT...........

Asterias\_A1 ..T.GG..-.....A....CTCA....C..ACCC.GA......A...............................AC-............

Acanthaster\_NC\_007788.1 ........-.....................----...........................................-............

 12S rRNA ->||-> tRNA-Glu

Acanthaster\_M2 GTCGTAACAAAGTAGGCGTATTGGAAAATGCGCCTGG--TACAAATTCTTATAGTTGAACCACAACAGCAGCTTTTCACGCTACAAGCTT

Linckia\_Ishigaki-11 ................T..............A.....CCG.AT....T..G........-A.....TT..............GACG.TC.

Asterias\_A1 .....................................--A.T.....T..G......-.-AG.....AT.A.......T.T..T.G.T..

Acanthaster\_NC\_007788.1 .....................................--...................................................

 tRNA-Glu ->| |-> tRNA-Thr

Acanthaster\_M2 GGGTTAGACCCCCAATGAGAATT---------GCACAAGCGCCTCAAAAGCTGACGGGTAAGCAATTAATCTTGTAAATTAAAAGGCGAA

Linckia\_Ishigaki-11 ......A.AT....GCA......TAAAATTATAAGTGCTT.T.CTG......--TATT.T....G.....................A...

Asterias\_A1 A....G..A...T..CA.A....---------------......T.......--TAAC......GAC.............GT...ATA..

Acanthaster\_NC\_007788.1 .......................---------..........................................................

 tRNA-Thr ->||-> D-loop

Acanthaster\_M2 GGTTCGAGTCCTTTTTGAGGCTT-------------------------------------------------------------------

Linckia\_Ishigaki-11 ....AA.C.....C.CAG.A..C-------------------------------------------------------------------

Asterias\_A1 ....TA.AC.......A...T..TACTCTCATAGCACCAGGCTTATTAATGCAAGAAGAGAAAAGAATTCATAAAAATACATAAAGTACA

Acanthaster\_NC\_007788.1 .......................-------------------------------------------------------------------

Acanthaster\_M2 ------------------------------------------------------------------------------------------

Linckia\_Ishigaki-11 ------------------------------------------------------------------------------------------

Asterias\_A1 CAATTCTCCTCTTTTCCTCAAAAAAAGAGAAAATACTCTTGCAAAAAAAAATTAACTTAGTAACATCACTTTTCTCACCCAAAGAACTTT

Acanthaster\_NC\_007788.1 ------------------------------------------------------------------------------------------

Acanthaster\_M2 ---------------------------------------------CCCATAACCCCCCCCCCCCTCCGGGGGGGGGGGTTAGCTG-----

Linckia\_Ishigaki-11 -----------------------------ATTTATCGTTTATGTG......GT--.T.TATG..C..C..........GGG.GG.-----

Asterias\_A1 TCGCCCAACAAAAAGAGAGCGGGCGATAAACTTTTTATAAAAAAC.T....GTT..TTTATG..C..TTC........GC.ATG.TTGTA

Acanthaster\_NC\_007788.1 ---------------------------------------------..................TC.--.................-----

Acanthaster\_M2 -----GGTATAAGTTTGTGTTCTTAAGAAAGCTATACAGGGCCAGGGTATTATGCAGACCTCCCCTATGGGGTAATACAATCCGGAAAG-

Linckia\_Ishigaki-11 -----------------------------------------------------------------------------------..GGG.-

Asterias\_A1 TAGTTA...C.CAAA.A.C..TC..----------------..TAA.GGC.T.CT.A.....T.TAGCC.------C...ATA....G.T

Acanthaster\_NC\_007788.1 -----...................G...................A...........A........................A.......-

Acanthaster\_M2 ---------ATACACCTTTTTTCTTACTTTTCCGCTCCGCGGGGGGATAGTTAGG---GTAAGGCTACATAAGCTAAACCCAGTTTATAT

Linckia\_Ishigaki-11 ----------------------------------------......CCTCCCG..---.GGG..GGGGG.T...G.GCA..------.T.

Asterias\_A1 TTTCTAACTT..TGTTG.CC..TC..TG.AC.A..CT.C.A.AC..TCCCCCGA.CAA....AAAGGG..T...G.-------------C

Acanthaster\_NC\_007788.1 ---------..............................................---.............G.................C

Acanthaster\_M2 GCCATCCTACATTCTAG-TATAAGTTCTTTCTGATACAGGATTAATA-CTAAACAATGACAGTACCCGCTTTACCGTCTTATCAAAAAAC

Linckia\_Ishigaki-11 C.A.CT..T.C..TAGAGA.GG.A..AAC...TTC.A.AA.C.GTAGAG.T.TTT.AA...AC.T.A.T.ACTTTA....----------

Asterias\_A1 .GAG..T.CTG..TGCAG.G.T...CTA..T.TT..T.TC..GCCAG----TTTT.A.TA..C..AAAT...TA.A......T-------

Acanthaster\_NC\_007788.1 ...........C.....T.............................-..........................................

Acanthaster\_M2 CACGGTCACGTAGGCCCTATGCAACTATATAACCATCGACGTCACACTTTAACCCAGTTTTTAAACCCTAAACCTCTCACGCAGAGGCTT

Linckia\_Ishigaki-11 --------------------------------------------..T.A...GA...AAC.-----------------------------

Asterias\_A1 -----------------------------------.T.TTACT.T..GC...AAT..GA...----.T.G..AT.T.TTT.T.A.A----

Acanthaster\_NC\_007788.1 .................................T........................................................

Acanthaster\_M2 GACGTTTCCACTGCCTGAAGCTACCGCAACCGCAGACACCAAGAACCAATCTTTATTTTACAACAGAACCTTCAAAAGTGTTTACCTTAA

Linckia\_Ishigaki-11 ---------------------------------------------------------------------T..ATTT....C...TT....

Asterias\_A1 -----------------------------------------------.G.T.CAT....TTTT..AC.GT..TTTT....C..TTT..T.

Acanthaster\_NC\_007788.1 ..........................................................................................

 D-loop <-| |-> 16S rRNA

Acanthaster\_M2 GATATTGACACCACCCCTTCGATCCTTTCGTACTAGAAGGGACCCTTGCTCTATTCAATCGTAGATAGAAACTGACCTGGCTCACGCCGG

Linckia\_Ishigaki-11 AGC....G...T.TTT.CCT.G.............AGG.AA.TAAAAAT.TGG--...................................

Asterias\_A1 A.A....G...T..TTT.CT.G.............AG.AAAGTA.AACT.--------....G...................T.......

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TCTGAACTCAGATCACGTAGGATTTTAATGGTCGAACAGACCAACCCTCAGGAGCTGCTGCACCCCTAGGTAATCCCGATCCAACATCGA

Linckia\_Ishigaki-11 ......................C.........................T..A.A........TTT..T..A.G.................

Asterias\_A1 ...................A...............................AGA........T.T.....A....T..............

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GGTCGCAAACTTCCTTATCAATAAGAACTCTCCAAGAAAATTACGCTGTTATCCCTACGGTAACTTATTCCTCTAATCGCCCTTTACCGG

Linckia\_Ishigaki-11 ...........CT.........GT.G......T....G...A.....................T..G.....T.GT..A.TT....AAA.

Asterias\_A1 ............TT.........T...........A....................G...............T.GC....TA.C.---A.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CGGATCCCC--------GAAAAAGCAACACCTGCATGGAAGTTGGCACTTCACCAAATGCTTAATAAA--------------CGGAGGAT

Linckia\_Ishigaki-11 T.....ATT---------..TGT.T..TTTT.A...-----------T.C..AAGTG.TT.CTG..G.ATTATTACTCATAT........

Asterias\_A1 ......A.TTTATTTTAA..TGGTT.TTTTT.ATG.-----------T..T.G-----------------------------......C.

Acanthaster\_NC\_007788.1 .........--------...................................................--------------........

Acanthaster\_M2 AACTATTCTCCGCAGTTGCCCCAACTAAAG----------------CTACAAGCACATAGCCAAACCGCCTA------------------

Linckia\_Ishigaki-11 T.G.T.......T.A.........T.....TAGTTATACTAAAA----C..C.T..TA..TT.G.GT.AA.TTACTTTTATTGTTAAAGA

Asterias\_A1 TTT...A......GA.........TC....TTAGTATATTAAAAGG...AG.AT.A.A.ATT.G.TTTTA..AAATTTT----TATAAGT

Acanthaster\_NC\_007788.1 ..............................----------------.............A....G.......------------------

Acanthaster\_M2 --AACGGTAAACTCACCCCCTTTAAGAAAGAAAATTAGCCCCTAGGCGACCAAACCAACTTGTGCAACTAACTAAAGCTCGATAGGGTCT

Linckia\_Ishigaki-11 TC.G.TTA.G..CAGTA.TT....GTTT..G.TTA..--------------------------------T......A.............

Asterias\_A1 TT...AT..G.T.T.TTATTC..T.TT.CC.CT.A..TT----------------------------T.T............C.......

Acanthaster\_NC\_007788.1 --.......................A................................................................

Acanthaster\_M2 TCTCGTCCCACGATTACACCCCCGCTTCTTCACGAGGATATCAAATTCAAGATC-TGGGAGGGAGACAGCTGAACCTCCGTCTTGCCATT

Linckia\_Ishigaki-11 .............C.TT.TATTT..........A.AT....T..T........AT.AAA............AG.TT..............

Asterias\_A1 ........T....G.TT.TTT..............AA....A.........T.A-.AA..AA.........T....C.G...........

Acanthaster\_NC\_007788.1 ......................................................-...................................

Acanthaster\_M2 CATACCAGCCCCCATTCAAAGGGCAAATGATTATGCTACCTTCGCACGGTCAAGATACCGCGGCCGTTTAACTAA-GTCACCGGGCAGGC

Linckia\_Ishigaki-11 ................T..........................................................T.....T........

Asterias\_A1 ..........T.T...T..GA.....................T................................-.....T........

Acanthaster\_NC\_007788.1 ...........................................................................-..............

Acanthaster\_M2 AGGACCCTTTATACATAAGAAAACTTTACAAAGGGCGATGTTTTTGGTAAACAGGCGAAGTCCCCACATTTGCCGAGTTCCTTCCCCTCA

Linckia\_Ishigaki-11 ..A..T..........C.AGG.GT...C.....A.........................A.--.T.A..................TT.T.

Asterias\_A1 .......C....T...T.A-TTTT...G...G..........................G..--.A..................TTT..T.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TCTCTCTAATTCTTACCAGGCCACTTGAGTTAGCAGACAGACAAAAGCGAACTATGCTTTCCCGCACATATATA---CTTCTTTCCATCA

Linckia\_Ishigaki-11 AT.--T..TA....CT--.ATTT.C......G.A.....----.TTAAT..A.T.TT....T..TTTG...TC.TCTTA.T........C

Asterias\_A1 .T.GAT...A.T.A.T--AAT...C..G...G.A.....T--TGTTTA...A...TA..C.TGAT---...T.TTAGT........C..C

Acanthaster\_NC\_007788.1 ......................G...................................................---.............

Acanthaster\_M2 AAAATTAGGA-----------CTGCTTAATACACAAAAGGCCTACTCTACTTCTTTACTAATTCCAGCATTATAACTCCTGCAACCCCGC

Linckia\_Ishigaki-11 ...G......TTATAATTATGAA.A.....T.T..----..AA.TCAAGTA..A.........AA.....CT..T..TTC.AT.T.TTTA

Asterias\_A1 ...G......-----------A..G..........----A.TG.T.A..A.A...........TA.....AT..T..TA.AATTTTATAA

Acanthaster\_NC\_007788.1 ..........-----------.....................................................................

Acanthaster\_M2 AGGACTCCCCCGTAAAATAGTCACAACATAAAACCCG---------------------------CCTTACAAAAATCCGTCTACAC-GCC

Linckia\_Ishigaki-11 .AA-------T.CG....-T.TC.G.T.AGG.GTT----------------TTATAATTTCGGCTT...T..T...AA.AT..TT.T.TG

Asterias\_A1 .A.-------TC.TC....A.TC...T.A...CTT..AGATCTGAGCTAACCAATATTTTATATTT..GT..G..AAA.-----------

Acanthaster\_NC\_007788.1 .....................................---------------------------......................-...

Acanthaster\_M2 ACGGGCTACGTAAAACAAGCTTTAACGCCCTC-GTTCGGATAGATGCCATTAATCCTACCACTAATC-----GAGACCCAATTAACGTGT

Linckia\_Ishigaki-11 GGT.TT.TTA.CG..AG...........TT..TAGAAA...G.....T...........TTA...GTTTCAAAGT...AC...CGTT.C.

Asterias\_A1 --------------.A............TT.TAA..TA.T.......T...........T-------------------------TT.C.

Acanthaster\_NC\_007788.1 .........A......................-..................................-----..................

Acanthaster\_M2 TTCCCTGCGCAT---------------TTTTAACCCATGACTCAGGCTTTTACCTCCTTGACAAGAAAGCTTATCCCTCCTTGTCTACGC

Linckia\_Ishigaki-11 ..TAT.AG-------------------CC.A..TTA..A.AAA...T....T...A........A.......G...T..T.......A.G

Asterias\_A1 ..TAT.AAAT..TTTTATAAATCATGC.C....TTAT.T.T.A........T...T........AT............A.......GA-A

Acanthaster\_NC\_007788.1 ............---------------............G..................................................

Acanthaster\_M2 TTTGAATTCCCATTAAGGATTTAATCATTAT-----------------CCATGTGATAACACAACCTTAATAGCCAAACAAACATGGCTA

Linckia\_Ishigaki-11 GG.TG.G.ATT..CT.AATA..TT.TG....CCTTAAAAATTTGATTATA.AA.A..G..TTC...C.----------------......

Asterias\_A1 GA......TTT..A..AA.G.GTT.TT..C.GTAAAGAAATTT-----TT..T.T.....TTC...A.----------------CAA..T

Acanthaster\_NC\_007788.1 ...............................-----------------...C......................................

Acanthaster\_M2 ACACCAATTTCCGGGGAAACCAGCTATCGTTGAGCACGATAAACATTTCACATCTAATGTACCCTCAAA-CCTTACTATTGCAACAGTAA

Linckia\_Ishigaki-11 .G.........TC.AA...........AAC.A..TG....T.G.....T...C.....A.TT......GCA...................

Asterias\_A1 .A.TT......TT.AAG..........AAC.T.ATG....T.G...............A..........-GGAC..............GT

Acanthaster\_NC\_007788.1 .....................................................................-....................

Acanthaster\_M2 AAGCCTTCTCCTC--ACAAGGAGAGTACACTAGCTCGCTCAAATTCGGGTACGGCAACTCT-TTACCAAAATACTCACCGAACCATCATA

Linckia\_Ishigaki-11 ....TA.A..TCT--TT...T...AA.T.T......A..T.GT......A.TTAAG...T.TC.TTT.....T..TG.TCT.....T...

Asterias\_A1 CCT.T..G.TTCTTATA..AC......T.T......ATCA.GT......G.ACAA...G..C...GT....-T..T..TC......T...

Acanthaster\_NC\_007788.1 .............--..T...........................................-............................

Acanthaster\_M2 CAAAAGGTACAGGACTTTACTCTTTCTTTCCTACTCTTAGATATTTCACGATATTTCAACTTTCCCTCACGGTACTACCCCTTTAGCTCT

Linckia\_Ishigaki-11 ...........A.GT..A...T.......TA.GT.TA.CA..T......AT........T................TAATT..ATAG.T.

Asterias\_A1 ...........A..AA.A.A.T..C....AT.TA........T.ACACT.T........T.....T.T..A......A.TA.A.......

Acanthaster\_NC\_007788.1 .............G............................................................................

Acanthaster\_M2 TACTACGAGTTTCACTGATA-----ACCTACTACTCCTGCTTGTCCCAAACTATCAATATTTTGGTAAACTTAAAACATCACAGTTTTAT

Linckia\_Ishigaki-11 ..--.A..AA..TT..A...ATTAT..T....TT..A.TT....TAA...T.T.TTC..AAGATT....T.AG..TT..TT..---CA..

Asterias\_A1 ..--..T.AAG.TT..T..TACAAT..TCCT.TT.AG.TT..A.TT...TT.T.TG..T...ATAA..T...T..C.G.TTT..C..A.A

Acanthaster\_NC\_007788.1 ....................-----.................................................................

 16S rRNA ->| |<- ND2

Acanthaster\_M2 TATTCCCTCACCCTTACAAGGCTAGTCTTT-AAAAATCTAATTATTCCGTATAAAATCTACAGCAAAGAAG----CGAACACAGGAAGAC

Linckia\_Ishigaki-11 A...------------TT.AA...A.A...AT...C.T.T....-----....T.T.TATTTTTT..AG..AACTTA.TA.TG.....GT

Asterias\_A1 A...------------T.......A.....-T...T.A.T.A..-----.....TTAT.TT..TT..--------TA.TAG..CC....T

Acanthaster\_NC\_007788.1 ..............................-........................................----...............

Acanthaster\_M2 TC----------ACCAGACCCAGCAAACTTACCCTTAAACCCCCGCAAAGAACCAAACCACGAACCGTAACAGCACCT---GATTTTCCA

Linckia\_Ishigaki-11 G.-----------T..AG..A.AT.TT..C.GG.A..CTAGTATA..T.AT.T..T..TTAAG..T..T..G.A.TTCTTA.C....T.T

Asterias\_A1 A.CGGCATTAAC..T.AG..A..A.TT..A.T...AG.CAAGG.A.TT.A..TT.T.GT.TA.GTTT.T..CTT.ATAGAA......TT.

Acanthaster\_NC\_007788.1 ..----------..................................................................---.........

Acanthaster\_M2 CCCAGCAGCCCCCGCCAACCAAAGAGAACTAAAGAATGTTGAGGAAACAGTACCAAACTCCTTTTAAAGGACACGCGGAGGTAATAAAAC

Linckia\_Ishigaki-11 .T------TTT...T..GGAG..C.CTGTC..G.....C..T.....A.A..TT..G..A..A.....T.CT.TC..T.AA...A....T

Asterias\_A1 G.------T.TT.....TGA...A.CC.TC.TT.....C..T.......AACAG.GGACA.....G..ACTT.TC..A..A...A....A

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AAACTAAGCAAACTTCCTGCGACTAAAAAGCCCCTCGCCAGAATACTACCCCTCTCAAGAAGACACTTAAGAGAAACGAACTTTATCAGA

Linckia\_Ishigaki-11 ..T..T..A.GT..A.TAATA.T.....TTA....A..GGC..A...GGATT.A.GT.TG.....T......CCT.G.......T.T.T.

Asterias\_A1 .GT..C.AT..C......A.T.T...C.CAA.A.AA.GAGCT.ATAATTTTT.AGAC..........CT.A..CT..A......T.T.AG

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AAGCCAAAAAGAGGAGGCAAACCCCCCAAGGAAAGTACACCCAACACCATGCCGGCACTCCCCCCAAGACTAAAGTACGAGAGCCGACCT

Linckia\_Ishigaki-11 ..T..CGTT........T..T..T..T.....T..A..TA.T.CAC.T.AAAACA.T.CTG.TGAGGAG....TAGTG....TT..T..A

Asterias\_A1 ..T..TGT...............T..T.G...C.AG.TTATT..T.T..A.ATTATG.C.ATTAT.TTTT..TG....ATC.A...C...

Acanthaster\_NC\_007788.1 ...................................C.......G..............................................

Acanthaster\_M2 ACATGGGATAAGGTCTTTAAATCAAACTCTCTCGCAATCAAAAACACCCTAGAATTAGTAATTACATAAACCAACAACATAATGCAACCG

Linckia\_Ishigaki-11 .GCAA.......T.A.....CCG..GT..AT.TCTC.AG.T...AG.G........GA......T...........T...T.CCATT.TA

Asterias\_A1 .G.CAA..C.GAT.AAA...TC.CGCT...T.ATT...T..G..T.TT..TCTGC.TAAT..A.TG.....T..A.....T.C.....TA

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GCATTAACAGAATACCCCACGGTCGAACAGATCCACCCCATATGTGCTACCGATGAAAAAGCCAAGATCTTTCGCACCTGCGTCTGATTC

Linckia\_Ishigaki-11 .TT..TGGG.....AGAT.TTA.TCT...T..T..A.....G...CTA.TG..A.....G.....A.....A..G.....A........T

Asterias\_A1 AT..ACCAT.....AGAT.AAACTCTG..T..T.....T.AG..ACTA.TA..A..G..G....TT........A.TT..T.A...G..T

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AAACCACCTCACCCACCTATCAACACAGAAAGGACACCCAAACAGACCA---ACGCCCGAATGTCTACGCTATTAATTACATACACCAAG

Linckia\_Ishigaki-11 ..T..TG.C..T.......CT.GGG....T.....T..T.T.AT..TT.TAC.A.TTTTTT.TATCGTTT.CC..CA..TG..G.AT..T

Asterias\_A1 ..G..C..C..T..C..A.CT.G...T..C.AACAC..T---A....TGTGAGAATTTTT..TCT..G.AG.C..CAA...CTT..T.GA

Acanthaster\_NC\_007788.1 .................................................---..A...................................

Acanthaster\_M2 ACAGAAAAGGGAGCCAACTTCTGTCAAGTTGACAAAACCAAACCCTCCAGAAAGCCAACCCCCTGAACAACATCTGGGAACCAATAGTGA

Linckia\_Ishigaki-11 .T.ACT..A..G..T.C...T..C........A.GG.TT..C..T.GG.C...ATT...T..T....TT..G..A..A..T........G

Asterias\_A1 .TGAT...A.....T.T......C.....G..A.GT.AT..T....GA.....A.TT.AT..T..G.TT........A..T..G......

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CATGGAAAGAGCCCTAACTTAAGCCCCACGGCCAAGGTAATCAGCACGGAAGAAACCCTAAGTAAGGGTTGACCGACTAGCCACGAGGAA

Linckia\_Ishigaki-11 ..A.....C.AT..C.....T..G.TT.A.....GA..G.AT.TG.TT..T.TG.AAG.TTT...C..A..GG.T.TGGAT..A..A...

Asterias\_A1 ..C.....T.AG........T.AG.AA.GA..T..A..T.GA.CT..T..CCT..AATCTTTC..T..ACA.T.A...GA...A..A...

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CTAAACCAAGCTTGGGTAACAACAACGTTCAGTATGACAGCAGCCCTCACGGACTGTACCAAAAAATACTTTACCGACGACTCTACCTTT

Linckia\_Ishigaki-11 TAC.....G.....TA.T.G.G..G.A....AA..A.GT..T.....G.AA........T.G...........TG.TT.CT..C..G...

Asterias\_A1 .AC.....CAG...AAC..G.G....A..A..G.CC.TC........A.AA.C...C..T.............TT.TT........TCC.

Acanthaster\_NC\_007788.1 ...............A..........................................................................

Acanthaster\_M2 CGAGGTAAAAACCCTCCACATAAAATAGGTAAAATAGACAAAGTATTCACCTCCAACCCCACCCACAAGGTAAACCAGTGATGACTTCTT

Linckia\_Ishigaki-11 ......G....ATTGGA...A.G...T..A.G...T..T..........T...T..T........A.TA.....T.....G.....AG..

Asterias\_A1 .....AGT...TTGG........T..G..C.GT..T..A.G...G..T.A...T..A........A.CT.A...T..ACTG.....AGAA

Acanthaster\_NC\_007788.1 ..........................................................................................

 ND2 <-| |<- tRNA-Ile

Acanthaster\_M2 AAGACAATAAAAGTTCCAAATACCACACTAATAACCAACACGATAAAAACCCTACGATGCATAAAACCTGGAAGGAGTTTAACCTTCAGC

Linckia\_Ishigaki-11 ..T..C.CT..T....T..TA.AA...T.G.ATG.T..T.TT.ATGT.GTGT.T.......C.G...T....G...C.......CC.TTA

Asterias\_A1 GCT.........AC..TTGC..TT.TGT.T..T.TT..A.TT.A..T..TT..T....T..C.....T........A.C........TAT

Acanthaster\_NC\_007788.1 ..........................................................................................

 tRNA-Ile <-|<- ND1

Acanthaster\_M2 AACCTAATTATCAGCTAGGAACCCCTACTTTAGGGAGCAGGTTC-TATACCAAAACCAAGCTGGGAGGCAAAATATCAACGGAAACCAGC

Linckia\_Ishigaki-11 ..T...............AT.T..T.G.G.....A.-..A....--.GC.T..G.AT.GAGAA..T..T.GG.AG.T.GTTATTGTT..T

Asterias\_A1 ..T...............AGC...T.T.........T..A....T..GC..---.A...A.CTACC.....CCCT.TTTTTA.GGAA...

Acanthaster\_NC\_007788.1 ............................................-.............................................

Acanthaster\_M2 AACACCCTATAAAATACCAACACCCCCAAACTGAAGGGTAAATACTTCTTCCAAGTTAAATACATCAAATGATCATACCGAAACCGTGGG

Linckia\_Ishigaki-11 .CA.A...GA..GC..TT.GAG.AGAA.T.G.......A.G.........T..T....GG.....T..C..G.....A.....T..A..A

Asterias\_A1 ..A.AT...A.C..A.TT....AA.TT...GAT..A..A.G.........T..G...........A.GC........A.....T..A...

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TAAGACGCCCGAACCCATAAAAACAGAACAACCAGAAATACAGTCTTAACCCTCACTATCAGAACCCCCATAGGAAAAACACCCCCAAAG

Linckia\_Ishigaki-11 .....A..T..T..T.....G..T..T.TT..T....TAC.........GAGAT.TA..T..T.TTTT..AT..G..T.TTT........

Asterias\_A1 .....A.....C.....C.....T.AT..T..T.A.CC.G.T.....T.GGA.T.A.C.T.AT.TTTTG..T.....T.TTAG.GAC.CA

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GGGCTTGAACCCCCAAAAAACAAGACCACCGAAAGAAGGTTCATAAAAATTATTTTCCCGTATTCTGCTATAAAGAACATAGCAAAAGGC

Linckia\_Ishigaki-11 ...GAG.G...T....GG..A.GT.TTGT......C.AT........G..A.....TG.A.....G........A.....G.....T..T

Asterias\_A1 ..AGAACTC..T..T.......GA.GG..ACT..AT.AA.....G..G........GG.A.....A..A.....A..T.AG.....G..G

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CCCCCAGCATATTCTACTTTATACCCTGAAACAATCTCTGACTCCCCCTCCGTTAGATCAAAAGGAGCACGATTTGTCTCTGCCAAAGTA

Linckia\_Ishigaki-11 ..T..T..............G..A..A.....T..T.....T........T..C.A......C...........G..T..A..T..G...

Asterias\_A1 ..T...........A..A...........C..T..T..A.....T..T..A....A.........T..C..G..A..T.....T......

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GAAACAAATCAGACTACAAACAGAGGTGAACAACAAAAGACCAACCAGGAACCTCCCTGACTTTTTTCAATCACCCTAAGGCTAAAGCCT

Linckia\_Ishigaki-11 ..C..G..C..T.T...G..A..T...AG....G.T..AC...........AA..TT...GAA..C..T..T.TTTCT.AC..G..A...

Asterias\_A1 ....T......T.T.GA......C..AA.........TTC.T..T..AC..T..T.T..GGAA..CCT...T.GT..T.TAT....T..C

Acanthaster\_NC\_007788.1 ......................A...................................................................

Acanthaster\_M2 CCCGAAAATACCACCACCCCTAACAAAATCAGCCCTAGACTTATCTCGTAAGAGACCGTTTGAGCAACAGCCCGAACAGCTCCTAAAAAG

Linckia\_Ishigaki-11 ..A.......TA.....T.T...T..T.....A..C..T.....T..A.....T..A.....G..T..G..G..T.....C.....G..A

Asterias\_A1 ..A..GT.A.TT.....T.T...T.G...T.AG..C..C..A..T..A.....A.TA..C.....T..T........TC.C..C..G..A

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GAATAATTTGAATTAGATGCCCAACCCGACCCTAACAAAGCATAAACAGATAGCCTAGACAACCCCATCACCAAAACGAGCGATAGTTTA

Linckia\_Ishigaki-11 .....T..A.....T..A.A...G..T..A....G..G..A...G........A..T..A.GA..T.AT.T...T..T..A..A.....C

Asterias\_A1 .....T..A..G..T..A.A...T..T..........GG.A..................T..T..T.AA.TT.....C..A.....A...

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 ACTTCCAGCACACAAAAACCAACTGGAATAAGTGACCACAAAAAAAGCGCAATCCTTAAAAAGAGAATGGGGGACAAAAAAAACAAATAA

Linckia\_Ishigaki-11 ..A.TA.TAGTTG..T.CTTT..A..T....T.CTT.....T..T.AA..T..AG.A.T...T..T..A..A..G.....G....G....

Asterias\_A1 .A..TT.AAGTTG.TTG......C..G..T.T...........GT.TT..T.AAAAG.G...C.ACGCC..A..GG..T....T.G....

Acanthaster\_NC\_007788.1 .................................................................G........................

Acanthaster\_M2 GGCGAAGCTTTAGAAGGCTTTAAAGTCTCCTTTATAAGCAACTTGAACCCGTCTGCTAAAGGTTGCAACAGACCAAACGGCCCCACTACA

Linckia\_Ishigaki-11 ..A..T.....T..G...........T....................A..A.....C........T..T.AT...T.T..A.....G..T

Asterias\_A1 ..A.....A..T..............T........T.AT.G...A...........A.T...C..G.GT.A...GT.A..T..A..A.TT

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TTAGGCCCCTTACGAAACTGCATATAACCAAGAACCTTCCGCTCTACTAAAGTTAACAAAGCCACTGCTAACAACACCGGAATTATAAAA

Linckia\_Ishigaki-11 ..T..A.....C.....T........C..T.A...............C..G..C..A.GG...........T.GT..A..C.CA.C....

Asterias\_A1 ..T.............G.........G..T..T.....A.......T......G.GT........A....GT..T..A..G.CA..G...

Acanthaster\_NC\_007788.1 ..........................................................................................

 ND1 <-||<- tRNA-Leu

Acanthaster\_M2 ACAACTGATTTAACAATAAAAACTAACCCATCCACAACTAAAGAAAGGACTTGAACCTTCGATAGAGAAACCTTAGATTTCTTGCATT-A

Linckia\_Ishigaki-11 GAT.T........T...T.T..T...TTG............GA.G......C.....CC.....A.....T.....G...........A.

Asterias\_A1 C.T..G..G..T.A..AC..T.GA.GTA..GA....GT.GG...G....T.......CCT.G..A.....T.....GA....C.....A.

Acanthaster\_NC\_007788.1 ........................................................................................-.

 tRNA-Leu <-| |-> tRNA-Gly

Acanthaster\_M2 CCGCTTTGCTACTTTAGC-----TATTTCTATATATAAGAATTATCTGACATGCTTCACCCCTGATTGCAAGCAGGGACCCCTTAGTTGG

Linckia\_Ishigaki-11 ..A........TCC....A----...CAT.........AG.G---------.AT..T.TT.T..GC-TT..A..A.A..TTT..GA....

Asterias\_A1 ..............C.A.AATTT.T.AAT..C......AT.AA-.A..TTT.AT..T.T..T...C.TTTGA..A..C.TTT..GA....

Acanthaster\_NC\_007788.1 ..................-----...................................................................

 tRNA-Gly ->| |<- tRNA Tyr

Acanthaster\_M2 AAGCCAAGAATACTGATGTACTCGTGAAACC----TGGCGAGAGAAGGACTCAAACCCTCCTTATTGGATTTACAATCCACTACATT-AA

Linckia\_Ishigaki-11 ...T...ATG.......A.....A.A.....TCCT.AATAG..A........G....T.TA..CA.A...........T........-CC

Asterias\_A1 ..AT...AT........A..T.AA.A.....TTC-....A...A.....A.T.....T.TA..TA.AA.........TT.G.G....A.C

Acanthaster\_NC\_007788.1 ...............................----....................................................-..

 tRNA-Tyr <-||-> tRNA-Asp tRNA-Asp ->|

Acanthaster\_M2 CCTCTGCCATCTCG---CCAAAGGGCTAGTTAAACTGATAACACCAGAATGTCAGACTGGAATTGCTGGCTAATAATCCAGCGCTCTTTG

Linckia\_Ishigaki-11 TA....T....CTA---TT....AAT........-.A.....CTTG..T........CAA....ATC.......-....G.TAT.....-

Asterias\_A1 TT.......C.CT.CCTT...GAAA...........A.......TG..T........C...G.AA....TA..C.......T.T.TC...

Acanthaster\_NC\_007788.1 ..............---.........................................................................

 |<- tRNA-Met tRNA-Met <-|

Acanthaster\_M2 -AAAATAAAGGGAGGTATCTATCCTTCCATTTTTGAGGTATGAACCCAAAAGC--TTCTATTAGCTTACTTTACTTACT-----------

Linckia\_Ishigaki-11 -...............G..................G.................-T.ATCT...............C.AG-----------

Asterias\_A1 AG.G......A.....T.T........T.........................TT.A.AT..............CC.AATTAAGGGCTAT

Acanthaster\_NC\_007788.1 -....................................................--........................-----------

 |-> tRNA-Val tRNA-Val ->||<- tRNA-Cys

Acanthaster\_M2 --------ATTTTCCTA-GGTAGAGCTTGAC----CAAGCATCTCTTTTACACGGAGAAGATATCTGTGCAAACCAGATTACCTTGAAAG

Linckia\_Ishigaki-11 -------------------..........GTAG--......C...........A...T...C..T.......GT..A...G.........

Asterias\_A1 GGTCAAATT..GC.TCCTC.C........TTAATCT.................A.......AG.T....A..TT.GA.C.G-T...G...

Acanthaster\_NC\_007788.1 --------.........G.............----.......................................................

 tRNA-Cys <-| |<- tRNA-Trp

Acanthaster\_M2 TTCTGGCGGATA--TTACCCGCGTCTATAGATTTGCAATCTAAAATGTTAATTACACTACAAAACC-CAGGGGTTAAAAAACTCTCATTT

Linckia\_Ishigaki-11 ..T......G-GACC..T....A..........................T................-..............T.TC.....

Asterias\_A1 ..T.........AGA.GG....A....................T......................TT.AA.AC...G.G.G.T...C.C

Acanthaster\_NC\_007788.1 ............--....................................................-.............C.........

 tRNA-Trp <-| |-> tRNA-Ala

Acanthaster\_M2 TTATTTAAAGCTTTGAAGGCTATTAGTTTTCAATTAACTTAAACCCCTTAT---------------TAGTGAATTTAGTTTAACA---AA

Linckia\_Ishigaki-11 .........A.........T.T........--C................T.AATTATATTAATATA...........A......TTA-..

Asterias\_A1 ...A.G...A.........T.T....-...--G..........T.T...T.----------ATATA.................T.GAT..

Acanthaster\_NC\_007788.1 ..............................-....................---------------...................---..

 tRNA-Ala ->| |<- tRNA-Leu

Acanthaster\_M2 AACATTTGACTTGCACTTAAAAACTCTAAGTTTAAACCTTAGAATTCACA-AGCTAGGAGAAGGACTCGAACCTTCGATATTAGATCCTA

Linckia\_Ishigaki-11 ..T.C....T.....A.C.G...A.T.GG...C..GT.CC..........T.AT..A..A.G.....T.....C.T....A.........

Asterias\_A1 ........CT.....AGC...CTT.GA........GT.C.TC...C....A.A....AGA....GT.T.......T.....G...A....

Acanthaster\_NC\_007788.1 ..................................................-.......................................

 tRNA-Leu <-||<- tRNA-Asn

Acanthaster\_M2 AATCTAGCGCAGTAACCACTTTGCTACCCTAA--CCTGAGTCGACAAGTATTGATCTTGTTATCTCCTGGTTAACGGCCAATTGCCTTTC

Linckia\_Ishigaki-11 .G....TT...T.....C........T.T...CT.......T...................C....T..............AC.......

Asterias\_A1 .....CAA...T.....G.........T.A.G--......CT.G...............C.....TT.A............AC.......

Acanthaster\_NC\_007788.1 ................................--........................................................

 tRNA-Asn <-| |-> tRNA-Gln

Acanthaster\_M2 CATTAGGCTACGACCCAAA------------TAGAAAGTAGTTTAATAGGTAAAACAAAGAATTTTGATTTCTTCAACATAAGTTCAACC

Linckia\_Ishigaki-11 ...........A.....C.GACTTACTAACT...........A...AT..........................T..T..........T.

Asterias\_A1 ..C........A..T.-----------AACT................TA.......C.....A.....A.....G....C....G...T.

Acanthaster\_NC\_007788.1 ...................------------...........................................................

 tRNA-Gln ->||<- tRNA-Pro tRNA-Pro <-|

Acanthaster\_M2 CTTATCTTTCTA-GTCAGAAAAATAGGACTCTACACCTATACCAGCAACTCCCAAAGCTACCATTCTTGACTAAACTATTTTCTGTTTAA

Linckia\_Ishigaki-11 ............A.....G...G..A..T..A....T..C....AT...C..........TA.....A-............C......TT

Asterias\_A1 ...G........G.......G..C.A.....A.-..T.GCTT.TA...............TA...T..-.G........C.C...A..TT

Acanthaster\_NC\_007788.1 ............-.............................................................................

 |-> COI

Acanthaster\_M2 CCTATATATAATGAAATTATAAACCATGCAACTAAGGCGATGATTTTTTTCAACAAAACACAAGGACATCGGGACACTATATCTAATATT

Linckia\_Ishigaki-11 AT..........A.......T...............A..............G........T.....T.....T.....T...T....C..

Asterias\_A1 AT..........-..........A............A..C...C.A.....T..T.....T........T.....T..T...........

Acanthaster\_NC\_007788.1 .................................................................G........................

Acanthaster\_M2 TGGGGCCTGAGCAGGAATGGTTGGAACAGCCATGAGAGTAATAATACGAACAGAACTAGCCCAACCAGGCTCACTCCTCCAAGACGACCA

Linckia\_Ishigaki-11 ...A..G.....C........A..T.....A.....G........C.....G..GT.G........C..T...T.AT.A.....T.....

Asterias\_A1 ...A..T.....T..T...A.......T..T..............T..T..T.....C..A.....G..A..TT.A..T.....T..T..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AATATACAACGTAATAGTTACAGCTCACGCTTTAGTAATGATATTCTTCATGGTAATGCCAATTATGATCGGAGGATTCGGTAACTGACT

Linckia\_Ishigaki-11 ...T.....A..TG....A.....G......C.T..G.....T.................T..A.....A........T..A........

Asterias\_A1 ...T.....A..T.....A..T.....T...C.T...........T..T.....T.....T........A........T.....A.....

Acanthaster\_NC\_007788.1 ...............................................................................A..........

Acanthaster\_M2 GATCCCTCTAATGATCGGAGCACCCGATATGGCCTTCCCCCGAATGAACAACATGAGCTTTTGACTAGTACCCCCCTCTTTTCTACTACT

Linckia\_Ishigaki-11 T..............A..G..G..A........G.....A...........A..............T..C..T..T..A..C..TT....

Asterias\_A1 A..T.....T.....A..T..C..A........A..T...........A..A.....A.........A.C.....T.....CT....C..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CCTAGCATCAGCCGGAGTAGAAAGAGGCGCTGGAACCGGATGAACCATCTACCCTCCATTATCTAGCGGCCTAGCCCACGCCGGAGGATC

Linckia\_Ishigaki-11 TG....C.....T..G...........A........A........T..T.....A...........T.....C..T..T..T..G.....

Asterias\_A1 ......T..C..T.....T........A........T..C.....G..T..T.....T........A..A.....T..T..A........

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AGTGGACCTTGCAATATTCTCACTCCACCTTGCAGGAGCATCCTCTATCCTGGCCTCCATAAAATTCATCACTACTGTAATAAACATGCG

Linckia\_Ishigaki-11 ...T..T.....C.....T........T..A..G..T...........T..A..A..A.....T.....T..C..C..T.....T.....

Asterias\_A1 C..T..T.....T..C..T..TT.A..TT.G.....G..T..T.....TT.A.....T........T..T..A..AA.T..C..A.....

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GACCCCAGGAATCTCGTTCGACCGTCTACCACTATTCGTCTGATCAGTATTCGTAACAGCATTTCTGCTACTCCTTTCCCTTCCCGTTCT

Linckia\_Ishigaki-11 T..G........T..A..T.....GT....T..G.....A..G.....G...........C.....A..T..T...........A..A..

Asterias\_A1 A..T..T..T..G..T..T..T..A..T..T..T..T..A...........T.....T..T..C..T.....A.....T.....T...T.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AGCTGGAGCTATAACAATGCTTCTCACCGACCGAAACGTAAACACAACCTTCTTTGACCCCGCGGGGGGAGGAGACCCTATTTTATTCCA

Linckia\_Ishigaki-11 C........A...........C..A..G..T..T..T..C........T.....C.....A..C..T..T..T..T.....CC.......

Asterias\_A1 ............T..T.....CT.A..A........A..T..T.....T..T..C.....T..T..A.....G.....C..AC.T..T..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GCACCTTTTCTGATTCTTTGGGCATCCAGAGGTGTACATTCTTATACTTCCAGGATTTGGAATGATATCCCACGTAATCGCTCACTACTC

Linckia\_Ishigaki-11 ....T.A........T........C..G..A..A...........C.......................T..T..T..T..G........

Asterias\_A1 A..TT.A........T.....A..C..T..A..T..T........T.....T..............C..T.....G..A..A......G.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AGGTAAGAGAGAACCTTTTGGCTACCTAGGTATGGTCTACGCTATTGTGTCTATTGGGATTTTAGGGTTTCTAGTGTGAGCTCACCACAT

Linckia\_Ishigaki-11 T..G.....T..G........G...T.G..A.....T..T..C.....A..A..A..T...C....T..C...........A..T..T..

Asterias\_A1 ........AT...........T..TT....A...........A..AA.C..C..A........G..A..C..T..A...........T..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GTTTACAGTCGGTATGGACGTAGACACTCGGGCATACTTCACAGCTGCAACAATGATAATAGCCGTACCCACAGGAATCAAGGTCTTCAG

Linckia\_Ishigaki-11 ......T..T..A.....T.....T.....A..C.....T.................T..T..G..G..A........A.....A..T..

Asterias\_A1 ......T..T..G...........T........T.....T..T..C..T..T.....T.....T..C..T..C..G..T.....A..T..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GTGAATGGCAACGCTACAAGGCAGGAACCTCCGATGAGATACACCACTGCTTTGAGCCCTAGGATTTGTATTCTTATTTACCATTGGGGG

Linckia\_Ishigaki-11 A...........T..C.....A..A...T.A...........C..G..T..C......T....C........T........G..C..A..

Asterias\_A1 T........C..C.....G..A..A..A..A.....G.....T..T..T........A..............T...........A..A..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 ACTGACAGGCGTAATCCTAGCAAAATCATCCATCGATGTCATCCTCCACGACACCTATTACGTAGTCGCCCACTTCCACTATGTCCTATC

Linckia\_Ishigaki-11 .T.A.....A...G.AT....C..T..T..T...........A...........T...........A..A..T..............C..

Asterias\_A1 ...A..C..A..GG.TT....T..T..T.....T...A.A..T..T........A..C.....T..T........T.....C..AT....

Acanthaster\_NC\_007788.1 ..................G.......................................................................

Acanthaster\_M2 AATGGGTGCAGTGTTTGCTATTTTCGCAGGATTCACACACTGATTCCCTCTCTTTTCTGGAGTAGGACTACACCCCCTATGGGGGAAGAT

Linckia\_Ishigaki-11 ............A.....A..A.....T..G..T...........T..CT.A..C..C..T..G..C........T..T..AA.A.....

Asterias\_A1 C.....G..C..C.....A..A..T..T..C..T..C.....G.....A..A............A.CT..........G..AA.A...G.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CCACTTCGCATTAATGTTCATAGGAGTAAACCTCACCTTTTTCCCCCAACACTTCCTAGGATTAGCAGGTATGCCACGACGATACTCCGA

Linckia\_Ishigaki-11 ...T..TATTC.......T........T..A..G..G........T........T..T..G........A.....T...........T..

Asterias\_A1 T..T..T..GG.......T.....C..T.....T..T..C.....T.....T..TT....T.....C..A.....C.....T..T.....

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CTACCCGGACGCCTATACCCTTTGGAATACTATCTCATCCATAGGCAGCACCATATCCCTCGTAGCAACACTGATATTCCTATTTATCAT

Linckia\_Ishigaki-11 ...T..A..T.....C.....C..A..C..AG.A...........TTCT..T..C..A..TA.......T..A...........CT.AC.

Asterias\_A1 ......A..T..T......T.A..A.....AG.T..T..T..T..TTC...A..T..TT.AA....C..C..C.....TT.....T.A..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TTGGGAAGCCTTCACTTCCCAGCGAACCACTGTTCGACCCGAATTCGCACCCTCCTCACTAGAATGACAATACTCTTCCTTTCCCCCCTC

Linckia\_Ishigaki-11 A..A.....A...T.A..T..A.....AG..A.GTAC..A......T..A....A..G...............A.G..A..C.....A..

Asterias\_A1 .............T..A.TA....GG.AC..C.C.AC..A..G...T..T....T..CT...................T........T..

Acanthaster\_NC\_007788.1 ..........................................................................................

 COI ->||-> tRNA-Arg

Acanthaster\_M2 CCATCACACCTTCGACGAAATTCCGGCAACCGTATACTTAATTAAGTATGAGGATTAG--------TTTAACAAAAACATTTGACTTCGA

Linckia\_Ishigaki-11 ............T........A..AT.T..T..T..TC..........ACCACCAA.AGGATTAGT......T......C..A.T....G

Asterias\_A1 A........T..T..T....C...CT.T..T........G.....C..AA.A.C.AG---------.....GT.....T....GT.....

Acanthaster\_NC\_007788.1 ..........................................................--------........................

 tRNA-Arg ->||-> ND4L

Acanthaster\_M2 CTCAAAAAACTTCAG-TTACACCCTGAAATCCTTTTATTACACCTATCTTTATTAGCACCATATCCATATTCTACCTAGGATTACTAGGT

Linckia\_Ishigaki-11 ..T...T..TCCTG.-AG.A.A..CAGG......AA....A.T....A.....AGTT.TAT.TA.A.....T...T.....A........

Asterias\_A1 .C.....T.T..TG.TAATT....CA..GCTT..G....T..T.ATATG...C..T.GTT...AGA..T..T...A.T..TA.T..T..A

Acanthaster\_NC\_007788.1 ...............-......................................................A...................

Acanthaster\_M2 ATATTAATTAATCGGCTACACTTCTTGTCTATCCTCCTCTGCCTTGAACTTCTCCTAATATCGCTGTTCCTAAGAATGACGATATGGGCA

Linckia\_Ishigaki-11 G..C...CA.....A..C..T...C.T..A........A.....A......T.GT....T.....A..TT..G.TC.C...G.C..AT.G

Asterias\_A1 ..T..GT.A..A..C..T...C.......C..T...T.A........G..CT.AA.GG.T..A..T..TA..G.CT.TGTA...ATAT.T

Acanthaster\_NC\_007788.1 ................................................................................A.........

Acanthaster\_M2 CTAAAAACCGGAACCAACCTCTTCGTAGCGAAAAACCTTATCCTTCTTACTCTTTCTGCCTGCGAAGCAAGGGCCGGCCTTTCCCTTATG

Linckia\_Ishigaki-11 T.....T.ATT.T...GA.AT..TC.CT.C.G...A..G..AT.AT.A...T.AAGA..T..............T..TT.A..AT.A...

Asterias\_A1 GCT...TTG.CC.A..G...TC.TT..T.A...........TT.A..A..CT.A.....G........T..A..A..T..A..TT.A...

Acanthaster\_NC\_007788.1 ..........................................................................................

 ND4L ->||-> COII

Acanthaster\_M2 GTAGCGCTTTCACGAACTCACAAATCAGACTTAGTCATAGCACTGAATATCTTACAACAATAAATGGCAAATTGAACCCAACTAGGATTA

Linckia\_Ishigaki-11 .....C..A..T.....C....GT..C..TC.T...TC.AA.A.A.....AC...G.........................T.T..T...

Asterias\_A1 .....T..C..T.....C........T...C.T...TCGT..A.T..A..A....................C...............C..

Acanthaster\_NC\_007788.1 .....A....................................................................................

Acanthaster\_M2 CAAGACGCATCTTCCCCCCTAATGGAAGAACTAATCTATTTTCATGATTACACTCTAATCATTCTTACCCTAATCACAATACTAGTCTTC

Linckia\_Ishigaki-11 .....T..G........AT..............G.T.....C.....C......T....T.....A..AT..........TA.G.....T

Asterias\_A1 .....T........T.....T.....G..GT....T..C.....C..C..T..CT.G..T........T..T..T..T..T.....A..T

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TACGGGTTAGCATCACTCCTATTCTCCTCCAGAACAAACCGGTTCTTTTTAGAGGGGCAAGGACTAGAAACCATATGAACAATCATTCCC

Linckia\_Ishigaki-11 ..T..TC....C........T..........A...C..A..A......C....A..A......T.......TG.......T..T......

Asterias\_A1 ..T..A.....C.....TA..G.G.......AC..C..A..A..T........A..C...ACC..T.....T........TG.T..A..T

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GCTATTATCCTTATATTCATCGCACTTCCCTCCCTCCAGCTCCTCTACCTCATGGACGAGGTAAAAAACCCCTTCCTCACCATAAAGGCG

Linckia\_Ishigaki-11 ..A..A..A..A.....T..A..C..C..T.....T..A..AT.A...T.A........A.................G..A..T.....C

Asterias\_A1 ..AG....A..A.....T..T..T..C..T..TT.G..A..AT.A.....G..T..T..A..T..T..A..A..TT.A..T..T.....C

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 ATAGGACACCAATGATACTGGAGATACGAATACGCAGACTACCGTGAATTAGAATTTGATTCATACATGATTCCCACTTCAGACCTTTCC

Linckia\_Ishigaki-11 ..C..C...........T..A.....T.....................C.T.....C........T........A..G........GAAT

Asterias\_A1 ........T........T..A..G..T.....T..C..T.....A..CC.T..G.....C..T..T............AGT..T...AGG

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TCTGGTATGCCCCGCTTACTAGAAGTGGATAAACGACTGATACTCCCCGCCCAAACGCCAATCCGAGTATTGGTATCCTCTGCAGACGTC

Linckia\_Ishigaki-11 AT.....AC..A...C.C..T...........T.....TG....A..AT.A..G..A.....T........A...A.A...T.C..T..G

Asterias\_A1 GT...A.AT......C.T........A.....T..TT...CCT.A..T..A.....A..T..T........A..TA.T...T.T.....T

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CTCCACTCCTGGGCGATCCCTTCCCTCGGAGTAAAGATGGATGCGGTACCAGGACGACTAAACCAAGTAAAATTCTTCATTTCCCGGTGC

Linckia\_Ishigaki-11 ..A..T..A...A.AG.T.....A..A...A..........C..A..T..T..........................T.....T.....T

Asterias\_A1 T.A..T..T..AA.CG.T.....TT.A...A.T...........C..............T........T.....T..T..A..T..A..T

Acanthaster\_NC\_007788.1 ...............................................C....................G.....G...............

Acanthaster\_M2 GGCATATTCTATGGCCAATGCTCAGAGATTTGCGGGGCAAACCATAGATTTATGCCCATAGTCATTGAGACCACAAAATTTTCCTCATTC

Linckia\_Ishigaki-11 ..AC.T.....C..A..............A..T..A....................T.....T..A..AT.A.T......C...AAT..T

Asterias\_A1 ..GC....T.....T...........A..A.....A........C..T........A.....A..A...T..GTT........T......

Acanthaster\_NC\_007788.1 ..............T...................................C.......................................

 COII ->| |-> tRNA-Lys

Acanthaster\_M2 GAAACATGAGTATCTAACTTCTTAACGGAAT---CTCTGGTAAGCTAATAC--GGAAGCATCAAACTCTTGACTTGAATAAAAGTGGAAG

Linckia\_Ishigaki-11 ....A......T........TC...AT....---..T..A......T.C.A--.A.................T......G........GC

Asterias\_A1 ..G.AC.....C..C.GA...C...AA....AAA..T..A......T...ATG.C......T........A.T..A...C......ATCT

Acanthaster\_NC\_007788.1 ...............................---.................--.....................................

 tRNA-Lys ->| |-> ATP8

Acanthaster\_M2 T-CCACCCACTACCAGAGA--GATGCCACAACTAAATCTAGCCTGATGATTGTTTAAATTCTTAATTAGATGAATAACATTACTTATAGT

Linckia\_Ishigaki-11 CCT.GA......T..A...CCT.....C........A.....A.......CCC.A.....TC.T..AG..........TA..A.A..TA.

Asterias\_A1 CA..........T..A...AAA.....T..GT..G.A....TA.CC.....T.....C...GCCC.GGCC...T.TTTT..GT.......

Acanthaster\_NC\_007788.1 .-.................--.....................................................................

Acanthaster\_M2 CTTCACTGCTTTGCTTAGCACACCTCCAATAGAAAAGCCGACT--------------AAAGTCAAAGCCCAAACCACCTCACACC-----

Linckia\_Ishigaki-11 ...TT..ATC..AT.A.-------------....G.A.ATT..TCAAAGAAGAGTAA.T.TC..T..AT.....A.AGAA...A.AATAA

Asterias\_A1 AG.AT..AT.A.TA...-------------......A.TTC.C---------ATCAACT.ACT.T.ATT..GTTTCGG.A..T..TA-AC

Acanthaster\_NC\_007788.1 ...........................................--------------.......G....................-----

 ATP8 ->|

 |-> ATP6

Acanthaster\_M2 -------CCTTAAAAGTATGAACCTGAAACTAAAAAACATATTCGGCCAATTCTCCCCAGACCTCGTAGCTCTGGTCCCCATGACCCTGA

Linckia\_Ishigaki-11 GCAATAT..C----.AA....CTT............GA..T..T..T........A......A.AC.TCTAT.CA.A.......TTT.T.

Asterias\_A1 GTATCAG.T.C....AA....CTA....CT....C.GA..T..T..A...........T..TTATT.TTTAT.A.....T.....TT.AG

Acanthaster\_NC\_007788.1 -------...................................................................................

Acanthaster\_M2 TCGCCTTAGTCCTCAACCTAGGGTGACTCTCTTTAACAAGAGGAACAAACTGACTCCCCACTCGAAGGGGCGCTTTAATCCAAGCCTTTA

Linckia\_Ishigaki-11 .A..TC.CTC.T.A..T..TATC.....T.TC..CT.T.A..A.T....A...T.A..T..A...GTACATTTC...C.A.TTT.T...T

Asterias\_A1 CTT.TA.GT.TA.GGCTA.TTCC.....T.T...TT.T.ACTC......A.....A..T..C....TT..TTTC.C.T.TTT.A.T....

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AGCGAGAAACTCTGAGGATACTGTTCCAGCAAGCCAACCCCAAAGTTGCGCCCTGAATCCCAGCTTTTACCTCTGTATTTATCTTCATCT

Linckia\_Ishigaki-11 .T..T.G.CT.A.A.AA..CA.A.....A...A.A..A..A..TACG..C..T...G.A.T.CTA..CT.T..A.........C....A.

Asterias\_A1 .T.A..CCGTAA.A.A..C.A.A..T..A...A.T..T..T..TTCGATAA.T...G.T..TAT.A....T..AA.......TC.TT.A.

Acanthaster\_NC\_007788.1 ...............A..........................................................................

Acanthaster\_M2 TGTCAGTAAAAGTATTAGGACTACTACCGTATGCCTTCACCTCAACCAGCCACATATCACTTACTTATTCTATAGGCATCCCCTTCTGAA

Linckia\_Ishigaki-11 .C..CA.......T.....GA.T.....A..C.....T..TAGG..A..G..T.....CT.A..C...AGAC....AG.A..A..A....

Asterias\_A1 .T..T..T......C.....T.G..T..C.....T..T..TG....T..T........TT.G..A..CAGA.....G.....AG.A....

Acanthaster\_NC\_007788.1 ............................................C.A...........................................

Acanthaster\_M2 TGTCAGTAAATATCCTTGGATTCTATCTAGCGTTCAAAAGTCGACTAAGACACCTAGTACCTCAAGGTACCCCCTCCTACTTGATCCCTC

Linckia\_Ishigaki-11 ....C..C..C..T........T...A.T.....T..T.AA...T................A.....C..A..A.TTGGTC.A.....C.

Asterias\_A1 ....T..T..C..T..A..C..T...T..T.T..T..TGCC...T.G.....TT....T.....G..G..T..TAGA.TTC.T..T...T

Acanthaster\_NC\_007788.1 .................................................................................G........

Acanthaster\_M2 TAATGGTAATAATAGAAACAATCAGACTATTTGCACAACCCATTGCATTGGGCTTGCGATTAGCCGCCAACCTAACAGCAGGGCACCTTC

Linckia\_Ishigaki-11 .......G..............T...T....C..C..G..T.....TC.A..TC.T..TC.G..A..A........C..T..T..T....

Asterias\_A1 .............T.....TC.T.....T...........T.....TC.....C.C.....G........TT.......T..C..T....

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TTATTTACCTCCTCTCTACAGCAATTTGAATCTTAGCAAAATCCCCCCTTATAGCCGGAGTAACCCTCTCAATATTTTTCCTCCTCTTCC

Linckia\_Ishigaki-11 .A.....T..AT.T..C..C..T..C...G.....T.T.G.AA..TA...G.T...A.......G..TAT............T..A....

Asterias\_A1 ....A..TT.AA.G..G..C.....C..GG.A...ATG..TAA.GTTACA......A.GC....AT.TAT.......G.AT.A..A..T.

Acanthaster\_NC\_007788.1 ..............................................................C...........................

 ATP6 ->| |-> COIII

Acanthaster\_M2 TTCTAGAAATAGGAGTAGCCTGTATTCAAGCCTACGTGTTTACTGCACTAGTTAAATTCTACCTTGCCCAAAACCTATAAAAAGTTATGG

Linckia\_Ishigaki-11 .AT.....G.C..T...........A..G..G..T........A..C......C.C........AA........T.....T.--......

Asterias\_A1 .AT...................C..C.....G..T..A.....A..C...A..C.C..T..TT.A.TA.....TT.....-.--.....A

Acanthaster\_NC\_007788.1 ....G...................................C................C.........................-......

Acanthaster\_M2 CCCATCAACACCCCTACCACCTAGTAGACCAAAGACCCTGACCCCTCACCGGGGCTATTAGCGCTCTCATGATGACTTCCGGTCTAATAC

Linckia\_Ishigaki-11 .............A.....T..T..T...........A......T.A..T.....A.....A.....A........A..A.....G....

Asterias\_A1 ....C..G.....A...........T........C..T.....T..A..A..A..A..A..A..AT.A...........T..C..G..T.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TATGATTCCACACAAAAAGAAACTCACTACTTATTGCAGGGACTCTGCTCCTTACCCTAACTATCCTAAAATGATGGCGAGACGTAATAC

Linckia\_Ishigaki-11 .T........T..C...TCC...CTC..T..A..ATTT..AGGCA.T.....CTTG..C..A...A..........A.........G.C.

Asterias\_A1 .T.....T..T.TT..C.AC.C.CT...TT.....TT...CT.AG....A..A.TTT....A..TA....C.....A.....TA.T..T.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GAGAAGCAACATTTCAAGGCAGACACACCCTACCGGTTAACACCGGGCTGCGATACGGAATGATACTTTTTATTACCTCGGAGGTTTGCT

Linckia\_Ishigaki-11 .......T...........ATAC.....A..T..A..A..T.AA..AT.A.....T.................C.....A..A..A..T.

Asterias\_A1 ..........T.....G..ATTT......T..T.T....GA.AG..CT.A.....T......G.TT.A.....A..T..T..A..A....

Acanthaster\_NC\_007788.1 ...................................................................................A......

Acanthaster\_M2 TTTTCTTCGCTTTCTTCTGAGCATTCTTCCACAGCAGCCTAGCACCAACCATTGAGCTAGGTGTATCCTGACCCCCAACTGGAATTAGTC

Linckia\_Ishigaki-11 .......T.....T..T........T..T.....T..G..T..T.....TG....A.....A...A....G........A..T..A.AA.

Asterias\_A1 ....T..T..A.....T.....T..T..T.....A..A..T..T......G.A..A.....A.....A.....T...G.A..G....C..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CAATCAACCCCTTTCTGGTTCCTCTCCTCAACACCGCCGTCCTACTCTCATCCGGGGTAACAGTCACTTGAGCCCACCACAGCATTCTAG

Linckia\_Ishigaki-11 .C...........CT.A..C..CT.A..T..A..A..A..TT....A..T..A..A........T..C.....A........A.....TT

Asterias\_A1 .T.....A..T...T.A..C...T.A..T..A..G.....G..T..T..C..A..A..T..C..A.......................TT

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CCGGAAACCGCACAGAATCCATACAAGCCCTATTTCTAACAATAGCCCTGGGTATATATTTCACCGCCCTGCAAGCCTGAGAATACTACG

Linckia\_Ishigaki-11 .AAAG.....T.A....G.........GT.....C........TCTTT.A..GG.C..............T.....T...........T.

Asterias\_A1 .A.....T..T..T...G.T..C...AGT..TC.CT.....G.TATTT....A..T.....TT.TATT..T.....T..........TT.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 ACTCACCATTTACCATAGCCGACAGAGTATATGGCTCTACATTTTTTGTGGCCACCGGCTTCCACGGGCTTCACGTACTCATAGGAACAA

Linckia\_Ishigaki-11 ....CT.......T..............C..C........C..C.....T.....A..T.....T..A........C........T....

Asterias\_A1 ....C..C..C..A..C...........G..C..A.....T...........A..A..A..T..T..A..A..T...............G

Acanthaster\_NC\_007788.1 ...................................................................A......................

Acanthaster\_M2 CTTTCCTCTTAATATGCTTCTTACGATTAATATTCTTCCACTTTTCCAACAACCACCACTTTGGCTTCGAGGCAGCTGCCTGGTATTGGC

Linckia\_Ishigaki-11 .....T.G.CGG.T..T..TC.G..GC.....ACA...........T...C.A.....T..............C..A........C....

Asterias\_A1 .C..TT.AGCTG.....C....T..G...TACAAT.....T.....A..GC.......T.....T..T..A..C...T.T..A..C..A.

Acanthaster\_NC\_007788.1 .........................................................................G........A..C..A.

 |<- tRNA-Ser

 COIII ->|

Acanthaster\_M2 ATTTCGTAGACGTTGTGTGACTATTTCTATACGTTTGCATCTATTGATGAGGATCCT------AAGAGAAGAAAGGACTCGAACCTTTAT

Linckia\_Ishigaki-11 .C.....T..T..A..A...T....C..C..TA.A.....A..C..G..G..T..T.AGCCTC..............T............

Asterias\_A1 .C..T.....T.....C..G.....CT.....A....T..A..C...........T.------.......A......T.T..........

Acanthaster\_NC\_007788.1 .C...........A..C........................................------...........................

 tRNA-Ser <-| |-> ND3

Acanthaster\_M2 CTTTCTAGTTTCAAGCTAAACGCATCCCACTCTGCCACTTCTCCCCCAAA-TAATTCTTATATACCAA--ATAAAAATTTACAAATTTAC

Linckia\_Ishigaki-11 .A..T................A......CA....T..........A.TCTAC....TA......A...CA...........T..GC...T

Asterias\_A1 .A..T...............T.T.....TG...A...T......AA.TTT---...TA....A.A...TT..----..G..T..CACA.T

Acanthaster\_NC\_007788.1 ..................................................-.................--....................

Acanthaster\_M2 TATCACTCTAACATCAATCCTCCTGATAACAGGATTAATCACTGCCGCGGCTCACACTCTACCCAACCGAAAAATAGACCTCGAAAAGTC

Linckia\_Ishigaki-11 .T.AGTAACT.TG.....AA.GT.A.........C.CC.A..ACTA..A..A..TG.C......GC...G...........G........

Asterias\_A1 A....TAG.TTTT.....TT.GT.TG.T..T.CTA..T.GGTG.TT..C.....TTT.T....TTCA..C..CT....TT.G......G.

Acanthaster\_NC\_007788.1 .......................................................G..................................

Acanthaster\_M2 CTCGCCCTACGAATGTGGGTTTGACCCCTTAAAACACGCACGCATACCATTCTCTTTTCGGTTTTTCCTAGTTGCTATCTTATTCCTCCT

Linckia\_Ishigaki-11 ...A..A........C.....C..T..G......TC......A..C.....T..A..C..A.....TT....A..A..A.....T..T..

Asterias\_A1 T..T..T.....G..C..................TCT..T..GG.T..T..T.....C..A.....TT....G..C........T..T..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 ATTCGACCTGGAAATTGCCCTATTATTCCCGTTCCCCGTAAGGGCATTTTTTATGTCCCCAAACACCTCGCTAGAACTGACTATAGCATT

Linckia\_Ishigaki-11 ...T..T.....G..C......C....T..A..A...CCCTCCTT.C.CA....CAA......TGTAC.T..CTTCT.A..CTC.TT...

Asterias\_A1 T..T.....A..G..A..T..C.....T..C......CA.GCTCT.....G.TCAAA...CTCTTTTGTCT.GTGTA.AG.A.CTTT...

Acanthaster\_NC\_007788.1 ...............................................................................G..........

 ND3 ->| |-> ND4

Acanthaster\_M2 CTTACTAATACTTACACTTGGGCTAGCCTTCGAGTGGTCCCAAGGAGGTCTCGACTGAGCTGAATAATAA----------ACTAATGATA

Linckia\_Ishigaki-11 .C..A....C..A..TG.A.....CATT..T..A..ACTA.....G..C..A..T.....A......--------TTACC.T........

Asterias\_A1 T...G....TT.GCTTA.A..C..CATA..T..A..AA.......G..AT.A...............A.TTTATTTTCTT.A.......G

Acanthaster\_NC\_007788.1 ......................................................................----------..........

Acanthaster\_M2 TATCTTATCTTGGCCTCCTCGTCAAGCCTGATCCTATCTTGGGCCGTCCCCCGAACACT---TCTATGACCCTCAACCAT----AATTTG

Linckia\_Ishigaki-11 A.....T.AC.TT.T....TA..CGCA..C..AA.TA.C..AA.ATC...TAAG.ACT.---A.....GGT....T....----.T.A.C

Asterias\_A1 ......T.TG.ATTG...CT.G.GGCTA.TT.TT..C....ACTT..AAA.AA..AC..TTA..G.A..GT...TTTA..TAGGTC.A.T

Acanthaster\_NC\_007788.1 ...........................................................---..................----......

Acanthaster\_M2 TTCCCTCATCATCTCCAGACTAACTCTTAACCTAGCCCAAAAACACATATCTTCATTATGACACAAAATCTCCGCTAGCTTCGCTACCGA

Linckia\_Ishigaki-11 ......G..T..A..A.C.....G.A.A..AA.CCTTACTCTC...GAGAG...CC....G......C.T...AAA.ATC.....GTA..

Asterias\_A1 C.TAT.TC.TT.T.TGC..T...AAT..T.AAACTT.ATTTTT..-------..CC.C.....T...C.T..ATTC.AA..T..A.TA..

Acanthaster\_NC\_007788.1 ...A.............................................C........................................

Acanthaster\_M2 CCCTCTAGCTTCACCTCTAATAACCCTGAGCATATGGCTTGGCCCTTTATCCCTCATAGCCAGAATAAAAACAATAAAGAGCCTACCACT

Linckia\_Ishigaki-11 ..AAT.G........A.....C.TA..C..ATGC..A..A.TA..AA.T.....G.....T.........T.CC......AAAG.AGTAC

Asterias\_A1 .AG...TT..G.C..C..C....TTT.A....CT.....G.TT..AA.T..TT.GC....T.......GTT.T.CT..T.AGTATA.C.C

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AATAAAACAGCGCACTTTCATTTCCCTTATATTTATCATACTGACTGCCCTAATCCTTACATTTGCCTCGCTTGAATTAACCCTATTCTA

Linckia\_Ishigaki-11 TGCC.....A..A.TA..T..A..T.....T.....A..CT.A.TAT....TT.A..A..G...T.AG..T.A......T.GT.......

Asterias\_A1 CCGCTCT..A..AGTC.........AC...T...T.T......TTA..T..TT.AT.A..T...T.AG.A..A...C.TT..T....T.T

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CATCGCATTTGAAACGACCCTTCTTCCAACACTAATTCTCATATCCCGCTGAGGGGCAAAAAAGGAACGGTATCAAGCTAGCACATACTT

Linckia\_Ishigaki-11 .G.A.....C..G..C.....C..A..T.....T.CA..T..T..T..A.....A..CC.G........A..C..G..C....TC.....

Asterias\_A1 T..A..T......T.A...T.A..C..T......G..T.A...A.T..A.........C.......G..A.T.......G.AGTG.....

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CCTTTTTTATACTCTCGTAGGTTCCCTACCCCTCCTCATAGCCATCATAAGCATCTA---------CACCGTAACCGAATCATCTTTACT

Linckia\_Ishigaki-11 T..G..C.....CT.G.C......T..T..T..T..A.....AC.A...TCAC.A..CTCTCAATTT.ATAC..---------TAACC..

Asterias\_A1 TA.............T.C...C........A..TT.GC....A..A...TTGC.A..---------T.A.AC..GG..C..T.TAA.TT.

Acanthaster\_NC\_007788.1 .........................................................---------........................

Acanthaster\_M2 ACCAGCCATTTTCCTTGGAAAAAAAATAACATCACTCCCCACTGCATTAACCTCCATATGATGAATCTTCTGCCTTATAGCCTTCATAAT

Linckia\_Ishigaki-11 G..TCA.C.....T.AAT....G..T.GC..AACA.AT..TTAC.CC..T.AA....G..G..GGCA.....T.....C......G.T..

Asterias\_A1 ...CT.T..C.AT...ACT.CT..CT.GTT....T.GT.TT..TTT.CTTTG..A..T......G.A..T..TT....T.....TG....

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AAAGATGCCGATTTATGGATTCCACCTGTGACTCCCTAAGGCTCACGTAGAAGCCCCCATAGCTGGGTCAATGATTCTTGCAGCCATCCT

Linckia\_Ishigaki-11 .........A..A..C..C......T.A..G..T..G.....A.....G........T.....A..T........C........T.....

Asterias\_A1 .........A...........T..T..T...T.A.............................A...........C.....T.....TT.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CCTGAAGCTCGGGGGATACGGCCTCGCCCGAACCATCACAATATTTATTATACCCGCTTCCGTAAAAATATCATTCCCACTCACAACCTT

Linckia\_Ishigaki-11 A..A.....A..A..T..T...T.A..A..C..A..TT....T...C..C.T..AAAAAGAAA.CT......G..T.....TGTT.T...

Asterias\_A1 A..T...T.G..A..T..T..T..TATT..G..ATCTCTTG.......AT.CAT.T.AG.TAGCC.......T..T..TT.G.T...T..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CTGCATATGAGGCGCTCTAATAACAAGGATCATTTGCCTTCGCCAAACAGACTTGAAGGCCTTAATAGCCTATTCATCTGTGGGCCACAT

Linckia\_Ishigaki-11 ...T.CC.....T..AT.............A........C..A.........C.A.....A........T.....C..G..T........

Asterias\_A1 T..T..T.....AA..T..G.......A..T..A..TA.............T..A.....TC.T..T..T..C..C.....T..A..T..

Acanthaster\_NC\_007788.1 .......................................A..A.........C..CG.TT...CG.CTAT.CA..T.G.CC.......C.

Acanthaster\_M2 GAGATTAGTAGCTTCTGGCATATTCTCAATATCCCTCTGAGGGATGAAAGGCGCTCTTACTCTCATGATCGCTCATGGATTAATATCCTC

Linckia\_Ishigaki-11 ....A.......A..C..A.....TA.CC....T..G.....T..A..C..G..A....T.T.A.....A..G..C..TC.T..T..T..

Asterias\_A1 ....A.G.....AG.A..G.....TA.TT......C......A..A.....G..CACA..CT.A.....A..A......C.C.....T..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AGCCCTGTTTTGTCTTGCAAAACTCCTCTATGAACGAAACACCACTCGAACCCTTTCAATAACCCGAGGCTTCAAGCTGGTTACCCCACT

Linckia\_Ishigaki-11 C........C..C..A........G..T..C..G..G..AGGG........T.....T.....T..T..T......T..A....T..C..

Asterias\_A1 .AGA..A.....C........TT.G..A..C........A.GT..C..G..AT.AG.T...........A..T...T.AA....A..C..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 ACTTACTGTATGATGAATAATAACATGTGTAACAAACCTGGGACTACCCCCTACTCCCAACCTAATTGGGGAACTTCTCATTATATCTAC

Linckia\_Ishigaki-11 C..A..GA..........G..TGTC..C...T.C.....T...T....A..C..C..G..AT..G.A........A..T.....C..G..

Asterias\_A1 T...T.AC.T..G........C........T..T..TT.A..G..T..T..A..A..A...T....A..T........A.....TAG.T.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CATTATAGACTGGAAAATCTTATCTACACCCATAATCACTACAGCAACAATATTTGGGGCCTTATACTCCCTCCTAATACTAGTTAACAC

Linckia\_Ishigaki-11 A..C...........T.C.C..AT...G..T..T..A...CT.T.....G..........TA.C........T..T...T.TAGA.GT..

Asterias\_A1 GG.C...AGA..A.....AAG....TTTATT..T..T...T.C......G..........AA.......T.....T..TT.TCAA..A..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TAACAAAAACTCCTTCCCAAGTTTTATTACAAAAGCTCGCCCGATAACCACTTCGGAACACACCCTAATGGCTCTCCACCTCATCCCCCT

Linckia\_Ishigaki-11 ...A.CT.GTA.T..T....AC......T.C...ATAA.TA.C....AG..A..C..G.........C.ACTCT.T.....TT....AA.

Asterias\_A1 A..A....GAA.T..T....CA......T.C...ATC.AG..C..T.AAT....T.....T.TTT.....TT...T..TA.TT....TA.

Acanthaster\_NC\_007788.1 ..........................................................................................

 ND4 ->|

Acanthaster\_M2 AGCATTTATAATATTCAACCCCTCCCACATACTAATAAAATAA-----------------------------------------------

Linckia\_Ishigaki-11 GCT....C.....GCT..T..A..TTTA...A.G..T......AATAAATGGATTAAAAATAAATTACACATAAGGGGGGGGCCTTAGGG

Asterias\_A1 TAT......C...A.T.....A..TGTAT..A......CC...ACCTTCCTGTTTTAGTAAAACTGACA---------AGGGCCCCCCCT

Acanthaster\_NC\_007788.1 ...........................................-----------------------------------------------

Acanthaster\_M2 ------------------------------------------------------------------------------------------

Linckia\_Ishigaki-11 ATAAAAATATTTTATGAGGAATAGTGTAAATCACCATCTAAAGAAAATGCTACAGTTGTTTCTTTAGATGGTGATTTACACTATTCCTCC

Asterias\_A1 TGCAAACTTTCTTAAAAAAAA----------------------------------TTTATTGTTTATTTTATGATCCTCACTTTTTTTTA

Acanthaster\_NC\_007788.1 ------------------------------------------------------------------------------------------

 |-> tRNA-His

Acanthaster\_M2 ------------------------------------------------CCCCAATGACTAAAGTAGTTTAATAAAAACACTAATTTGTGG

Linckia\_Ishigaki-11 TACA-------------GCAACGACTAATTTTCAAAA-------------TTTTC..TC............A......CT..........

Asterias\_A1 TGAAAATCTGTTATCATGCCAATACTAGTTTTAAACAAACTAAAAAAC.TTTTT.................AT.....C...........

Acanthaster\_NC\_007788.1 ------------------------------------------------..............................G...........

 tRNA-His ->||-> tRNA-Ser

Acanthaster\_M2 TATTAGAATCACCAGTTAAAACCTGGTCTATAGTCCGAAACTTATTGGCTTATTCTAGTCCTGCTAAGTCCAAGAATCTGTAGTTCAATT

Linckia\_Ishigaki-11 C....A..CT.......T..GT.........GA............A..........T.............AT.........G....G.CC

Asterias\_A1 .....A...T.T.........T...A...................A..T.....T...............TT.A.......G......A.

Acanthaster\_NC\_007788.1 ..........................................................................................

 tRNA-Ser ->||-> ND5

Acanthaster\_M2 CTATAGAAGTTTCGATGGTAATAGAAATCACGAGAATAATTGCAACCATAAAAGTCACCATTATAACCATACTATT--------------

Linckia\_Ishigaki-11 .C...............T.CT.GA..C.AC.T.AC.CC...CTT.........A.A.G...C...T.A..C..C..--------------

Asterias\_A1 .C...............CCCT..A.TT.ACAA.A...T..A.TTT.T..T..CTCTT.GC......TA.....T..ATCTAGAATATTTT

Acanthaster\_NC\_007788.1 ............................................................................--------------

Acanthaster\_M2 ------------TGTCTCCATATTTTGCCTCCAGGGAACTACATTGCCCTATAAA-----AGAGGCCCTAACCTTAACT-----------

Linckia\_Ishigaki-11 ------------.C.AC..T....C.T.T.T..AA...AGGA------------------...TA.T.G...AAC...CGACTCGGCAAT

Asterias\_A1 TTTACCAAATAA.C.A.TTTAC..C.T.T.T.C.TA.TAAGAC..--TT..C...TTTAT..GTATTAG...AA----------------

Acanthaster\_NC\_007788.1 ------------...........................................-----...................-----------

Acanthaster\_M2 --TTGGAGCACTTCATGATAAAAAGTTCGAATACACACACAAAAGAAGGCTATTATTTTCATCTGTACTAAAGAGATCAGCCCTCCTCTC

Linckia\_Ishigaki-11 AG.A..GAT.TCC..CA.A.C.G.A..TACCAG.CT.A.G..G....AAACCA.C..CAT.CAA..G.......TT..T.G...ATCT..

Asterias\_A1 --------------..A.AGC.T.C.CTTTTA---TCAGA..G.AT.AAACC..T...GTC...C.TT.....GCT.T...AGCTA.A..

Acanthaster\_NC\_007788.1 --........................................................................................

Acanthaster\_M2 ACTCATACCGCTCTTCCTGAAAGTAAAATTCAAAACCCCAGAGACAATAGTCTCCGTAACCGAATGACTTCCCAAAAACACACATCTCAT

Linckia\_Ishigaki-11 C..G.....T..A..TA.A...A.CTCC..AGG.T.A..CACT.TT..CACA...T..T.TAG....A....G.....AT.CTTC.AA.C

Asterias\_A1 T..TT.T..TT.GA.A..ATC.A.TTCTC.AGGCT.A.....C.T.G..A.TAAAC.T.GAA.C...T..T.G.TT..TT..TT.TCTT.

Acanthaster\_NC\_007788.1 ...............................................................................G..........

Acanthaster\_M2 TAACCTCGAACTACGATTCGACCTTTCATTCAAACTATTCTTTTCAGTTGCACTATTCGTCTCCTGATCAATCCTAGAGTTCTCACACTA

Linckia\_Ishigaki-11 ..GA..G.....TAT...T..TA.CAAG......A.G..TC.A..T..A...T..C.A..A...........AA....A......A.T..

Asterias\_A1 ...TT.T..GT...AC.AT...T.AAAG..T..C.....T....TTACA..C...ACA.....T.CT..G..TA....A..T..TA.T..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CTATATGGCACAAGACCCAGCACCGAACAAATTCTTCCGCCTCCTAATAATTTTCCTACTAAAAATGATCATACTCACCTCCACTGAAAA

Linckia\_Ishigaki-11 T......AG.GG.......T.CAAT..T........T..A.....C..T..A.....G...........A........A..A...A....

Asterias\_A1 T.......A.AC......CAA.AA...TGCT..T..T.A...T...G.......TT....T..T.....T..TT.A...CTGT..A....

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CGTATTCCTTTTATTTATAGGCTGGGAAGGAGTCGGATTCTTATCATTCTTATTAATAAGATGATGAACTACACGAGCAAGAGCAAAAAA

Linckia\_Ishigaki-11 TC.CC.T..AC.T.....T..A........T..G.....T.....C..TC..C.............GTTC..G.......A...G.....

Asterias\_A1 .T....TT..........T..T..A..G.....T.....T.....T..T...C.......C.....GCAA..T...A.C.AT..T.....

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 ATCTGCCCTTCAGGCAGTAATCTACAACCGAATAGGAGACATAGGTATACTCCTATTTTTCTCCCTCAGGGTTACAACCTTTAACTCCTG

Linckia\_Ishigaki-11 ......TA....A.....C..A..T..............T.....A..TT.AT.............A...A.A.GT.GA.....A..A..

Asterias\_A1 .G.C.....G..A..C.....T..T..............T.....CC.TT.AT.......TG..T.GGCAC...TTT.T.....A..T..

Acanthaster\_NC\_007788.1 ........................................................C.................................

Acanthaster\_M2 AACTTTATCGGAAATATTTATCCTACAGCCCAGGGGCTCTCTCAGGAATA---TTCTGCTAGTTGGAGCTCTCATAGCTGCCGCGGGAAA

Linckia\_Ishigaki-11 .T.AA....A.....GC.CTCTG..A.CATA..C.AAA.A.AGTTA....ATC.C..A...A.A...ATA..A.....A..T..A..G..

Asterias\_A1 GT.CC.G..A..GG..AAA.CAA.TA.AGTA.CA.AAG..T.T..A.T..AGC....TT..A.A......T.A.....A..A..T.....

Acanthaster\_NC\_007788.1 ..................................................---................C....................

Acanthaster\_M2 GTCCGCCCAATTCGGTTTACACCCCTGACTCCCAGCAGCAATGGAAGGGCCCACCCCTGTATCAGCCCTCCTCCACAGCTCTACAATGGT

Linckia\_Ishigaki-11 ...A........T..CC.G.....A.....T..T..............T..A.....C.....C..A..G..A.....A.....G.....

Asterias\_A1 ...T..T.....T..GC.T..T..T..G..T..T..T........G..A..A..T..A..C.....A..A..T..T..A..C..T.....

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AGTAGCAGGAATATTCCTTCTAATCCGCCTTGGTCCTGTATACTCAAACGTAAAAACCTTTAAAACGTGATGCCTTATACTAGGCTCCAT

Linckia\_Ishigaki-11 G..G..T........TT.G...G.T.....A..AT..C.C...AG.G..AA......A..CTC.T.C........A...........T..

Asterias\_A1 ...T..C........TT.G........AA.AA.C.....T..T....CATGT.G...T.....T.GA..G..T..A..T.....AG.A..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CACGGCCATATTTGCTGCAACAACCGCAATCTCTCAACACGACATAAAGAAGATAATAGCATACTCCACTACCAGGCAACTAGGGCTCAT

Linckia\_Ishigaki-11 T..T....C......C.....T..T..T..T..C..G..T...............G.T..C.....A..A..T..C...T....T..A..

Asterias\_A1 A..C...........A..C..T.....T..........................T..T..C..T..T........C........C..T..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GATGGTAGCCATAGGCCTAAACCAACCAGAAATTGCACTATTCCATATTTGCACACACGCATTCTTCAAGGCAATGCTGTTCCTATCCTC

Linckia\_Ishigaki-11 ......TT.A..T..GT....T..G...A....A..C..G........A..T........C..T..............C..T.....A..

Asterias\_A1 ......T..A........T...A.C..TAG......C.....T........T..T.....T..T..T.....C...T....TT.......

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TGGTAGAATCATCCACAGACTAAAGGACGAACAAGACATACGAAAGATGGGCGGGCTCCACCTAATACTCCCCAACACAACCGCTTGTAT

Linckia\_Ishigaki-11 G........A..............A........G.....T...........A..A..T.....TG.CT.A..A..A...T..T....C..

Asterias\_A1 A..G.....T..T..T..C..C.G...T........TC.............A..A..TTTTT.T..T..T..A..A..TT.T........

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TATCCTGGGAAGACTTGCCTTATCTGGTACACCATTCCTGGCCGGATTTTACTCCAAGGACCTAATATTAGAATTAGGCCTCTCTAAACT

Linckia\_Ishigaki-11 C...T.A.....T..A..A.....G....TC........A.....T........A............C.....A.T.....TA.A.G...

Asterias\_A1 A..T.....G..C.....A...G.A..G..C..C...T....T........T...............C.....ACTTCTT.AA.A.G...

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TTCGAACCTGATAGGAATTGTTTTGGCCCTTCTAGCAACCCTCCTAACCGCGGCATACTCATTCCGCATCATACACTTCTGCTTCACCAA

Linckia\_Ishigaki-11 C..C.....T..T..TG.AACCC.TT.GT..A..........A..C..AT.A.TC..T...A.A..A..A...T..........TTT...

Asterias\_A1 A..T...T.TT.TA.T...T.CC.AT.T..AG.T.....T..T..T..T..A.TC.....TC.T..G..A...TTA........TGGG.G

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AAGACCAGCCTTCTCACCCCTTTCTCCTACCAGAGAAGAAAAAATCAAACTAACCAAAGCGTTAAAACGACTAGCTATTGGTACAATAAT

Linckia\_Ishigaki-11 TTCT..CT.T...C.TGTT..AC.C.....T..G..........AG..C..C.GA.....C.....T..G.....A.CG..C......G.

Asterias\_A1 ..TT..TT.T..TAAT.....G.....C..G...........T.AG..C....TA.G.T.CC.T..T..T.....A..A..A..C.....

Acanthaster\_NC\_007788.1 ...........................................................T..............................

Acanthaster\_M2 CTCAGGATGATTAATATCAAACTTTATCCTACAGCCCCCGAAAATCACCATCAGACTCACCCTTAAGAGCCTCGCTGCCCTATTAACTGT

Linckia\_Ishigaki-11 G..G..G...A....T....CA......G..TTTAAAAT.CCTC.A.GT..ACTC...CTA..A.....T..A..------.C.CT.A..

Asterias\_A1 ......G...AC........CT...G.AT..TTTAATG.CCCT..T...C.GCA...TGTT..A...TCTT.A..------...TGG...

Acanthaster\_NC\_007788.1 .........G................................................................................

Acanthaster\_M2 TTCCGGAATAGTATTAACAGCATCACTACTTCGCACTCTTTCC-------CTAAAAATGCCCCCCAAAAACCTCAT------------AA

Linckia\_Ishigaki-11 C..AAT.C...G......----------..A....A...CAA.ACTCAA---.GT...AAAGT.G.GG..GA..CCAACTCTTCTGTC..

Asterias\_A1 ...T.CT..T.C.GC.TT----------T.AT..GTA..C.A.AATTAAGTC.CT....G.TT..GTTT.T..TTCTTCTTTACTTTAT.

Acanthaster\_NC\_007788.1 ...........................................-------..........................------------..

Acanthaster\_M2 ACGCCAAAACATTCACCACAAAACAGTGATTTTACGAACACGCATCCCACAACATCCTCACGAGCTTATCTTTCTCACTCTCTTTGACAG

Linckia\_Ishigaki-11 CTAGA...T.T..T..T..G..G..A........T...A.TATC.......TT...T.G..ATT.AAC..A..TA.TACT..CC.ACTTC

Asterias\_A1 .TCTA....GG..T..A..TTT...A..G.....TC..A.AATGG.....TTTG.AACTT.TTTTG.......T.T.GCT..CC.C..TT

Acanthaster\_NC\_007788.1 ............................................................................G........A....

Acanthaster\_M2 GAAGAACCCAAAGGATAGACCGAGGATGAAGAGAAAATCTAGGCGCACAAGGAATAAACTCGGCCTCTTCTGAAATTTCCCGGGAGTACC

Linckia\_Ishigaki-11 T...G..T.GG.AT.......AG..............AA.C.....C........TGCT.TAA.A..A..C.CTG.AA.G.AAA.C....

Asterias\_A1 TG.....A.G..AA.....T.AG..T....A.....GCA....A..T..G......GCT.ATA.G.....AACT..C...AA.ACA....

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AACTAACCCAAACAGGCTATATTAAGCAGTACCTTCTCCTCTCTACCACCACTTTCACCATTATAGCCATAGTCTCCACCACCTTTCTAT

Linckia\_Ishigaki-11 ..AGCT.T....G......C..A.....A.....AG.AT.T..ATTTT.GT.C....TA.....TT.T.GTA.ACTATTT.TT..CTCG.

Asterias\_A1 .GT.G..T........A..C..A.....C.....AACTA.G..CT.ATTT.T.....TTGCC...TTTT.TA.AGTATTTCTA.CAT.T.

Acanthaster\_NC\_007788.1 ..........................................................................................

 ND5 ->|

Acanthaster\_M2 AA------------------------------------TAACCAA----------------------CACCGCACTCTGTACA-CTCATA

Linckia\_Ishigaki-11 ..ACATACTTTGTCTAAACAAAGCTGTCAACCAAAGGC.......GTAAAGAACCCTTTCCTTTAAT.CTATT..C..A.TT.G.C....

Asterias\_A1 ..-------------------------------------------------CATCTCATGCGTTGCC..TAAT..CT.A..T.-------

Acanthaster\_NC\_007788.1 ..------------------------------------.......----------------------................-......

 |<- ND6

Acanthaster\_M2 ACAACTGAACACAAACCTAACCCTACAGGGCCTTTAATATTTTATATTCCGCCCCATAAGTAATCACTAGCGCAACCACTAGAGCAATAA

Linckia\_Ishigaki-11 GTCT..ATGT.A.TT.T.T......A........C..C.CCC.G..A..A.AA..G.....C.AA....A......A.T..AT..C.CC.

Asterias\_A1 ----------------------...T..A.....C.GA.C.........T.AG.....T..T.....C..G.....T.T..A........

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 AAAGTACGAACCCCCCTACCAACAAGTAGCCCCCCAACGCTTTATATAAAGCCCCACCCCCCACAAGATCCCTCTCTACTGTCATAGACC

Linckia\_Ishigaki-11 ....A.TAT.T.......TA.TG.G...C.A.....TTT.....A.A.GCT.T.TG.T.G.T.T..A...TAAA.TA..CAAGG.TTC..

Asterias\_A1 ......T.T.A.....C..ACC......T.AT.AG.CTTT...G.....TTTT..T.TT..A.TT.A...TAGA.T.CTATG.C.CATT.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 ACCCCCCAAGCGAGAAGCTCAAGAAAGGATCAAACCTCACGAAAGCCCAAACGACACCTACACCCCTTAAGAGGAATACCTCATTCAGGT

Linckia\_Ishigaki-11 .A...A....ATCC.CTT....A....T.........T.TA..TAT...C...GATAT..TC.TTACC.G..TA..A.TT..C..A.AT.

Asterias\_A1 .T.T.AGTTCA....GAT.A.GC.CGA.......GT.T.AACT.ATT..T.AA..TAA..TTAGAAAC....TTGT...T..C..A.TT.

Acanthaster\_NC\_007788.1 ...........................................................................G..............

Acanthaster\_M2 TGCTCACTACCGGGTACCGCTCCGCAGATATAGCCGTAGAATAAACAAAAACAACCAACATTCCCCCCATATAAATAAGAACAAGCACCA

Linckia\_Ishigaki-11 .A..A..A.TA..A........A.....A.....A..............T..T..A.G...A..A.....G.....T..T.TT.AA..T.

Asterias\_A1 .C.....C..A.....T..T..A.......A....C....G..T.....C.....T.G...C..T..A........C.AT.AT.AT....

Acanthaster\_NC\_007788.1 ........G.................................................................................

Acanthaster\_M2 AGGCCACAAAGGAAGATCCTAGGAGCCCACAAAGAAAGCACCCCGACACGGCCACTAAGACCAAACCTAGAGCACCAAAATAAGGAGATA

Linckia\_Ishigaki-11 .A..A.TG..A..GA.A..A....A...TG.G.TT.CA..G..TCT..GA..A..A.TT.....C..C.AG..C...T.G.....G....

Asterias\_A1 .A....TG.....TAGC..A.CT.AT.....G..G.TA..T..T....TT..T..G.TT..A.GG....A...T...T....T.......

Acanthaster\_NC\_007788.1 ..........................................................................................

 ND6 <-| |-> Cyt b

Acanthaster\_M2 ACCTATAAAACACCAGAGTACTTCCAAAGAGCATAACAACTAACACAGCATAAAAAACCATTATATATAA-AAATTATGACAGGCCCTCT

Linckia\_Ishigaki-11 .A........A..T.A...T..C..T..A.A.....AT....GA.T.CT........T............AG................T.

Asterias\_A1 .A...........A..G..T.....C.GT.A...T.AT.TA..GGT.AAG..G....T............T.............A..CT.

Acanthaster\_NC\_007788.1 .............................G............T...........................-...................

Acanthaster\_M2 CCGAAAGAGACACCCCTTATTTAAAGTAGTAAAAAATTTCCTAATAGACCTCCCCTCCCCTAGGAAACTGTCCATATGATGAAAATTCGG

Linckia\_Ishigaki-11 A........T......C.G.....GA..A.T...GGA.CT........TT.A.....T..A..A.....C..A..............T..

Asterias\_A1 A..T....CC...........C..GA.TA.T..CGGA.CTT....T.....T...AGA..A..A..C..A..A..T...........T..

Acanthaster\_NC\_007788.1 ..............................................................................T...........

Acanthaster\_M2 GTCCCTATTAGGCCTTTGCCTGATCATCCAAATAATCACAGGCCTATTTCTCGCTATGCATTATACCTCAGATATATCTCTAGCCTTTTC

Linckia\_Ishigaki-11 A..A..T.....A.....T..C..T...........T..G..G........A..A.....C..C..T..T..C..C..C.....T..C..

Asterias\_A1 C..TT..C....A..A...T....TG.A........T..T..A........G..A........C..G..T..C..T..AT....T.....

Acanthaster\_NC\_007788.1 ..........................C.................................A.............................

Acanthaster\_M2 GTCCATCAGCCACATATGCCGAGACGTAAACTATGGTTGACTCCTACGAAATATACACGCCAAAACGGCCTCCTTCTTTTTCCTTTGCAT

Linckia\_Ishigaki-11 T..T..T..A.....C..T.....T...........A.....T........C..C..T........A.....T........T..G..T..

Asterias\_A1 A..TG.A.AA...........G..T.....A..C..G..G..T........A.CT..T.....C..C..A..A..T.....TA.G...T.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TTATTTCCACATAGGCCGAGGATTATACTACGGCTCCTACATAAAAAAGGAGGCCTGAAAAGTAGGCGTTATCCTCCTTCTCCTCACCAT

Linckia\_Ishigaki-11 G.....T..T.....T......A..........G......G.G.....A..AA.A.....T.....G..A.....TT.A...T.G..A..

Asterias\_A1 G.....T........T.....CA....T.....A..T..TG.T.........A.A........G..A.....A..T.....T..T..T..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GCTAACAGCTTTCGTTGGGTACGTTCTCCCATGAGGCCAAATGTCATTTTGAGGAGCAACAGTGATCACAAACCTTGTATCTGCTCTCCC

Linckia\_Ishigaki-11 .........C.....G..T..T..AT.A....................C..G..T...........T..C..T..AA.T..A..AG.T..

Asterias\_A1 .GCC..C..A..T.....A..T..A..T..C..G..A........T..C........C.....A..T..T...T.A.....A...G....

Acanthaster\_NC\_007788.1 ....................................................................................C.....

Acanthaster\_M2 CTATATAGGAACATCAATAGTCCAATGACTTTGAGGAGGATTCTCAGTTGACAACGCCACCCTCACCCGATTTTTTGCCTTCCATTTCCT

Linckia\_Ishigaki-11 A..C........................T.A.....T.....T.....G.....A..T...T.A..A..C.....C..A.....C...T.

Asterias\_A1 T...G.......TA.C..T..T..G..GA.............T..T..G.....A..T.....T.......................TT.

Acanthaster\_NC\_007788.1 ...........................G..............................................................

Acanthaster\_M2 ATTTCCCTTCATCATCACCGCTCTCTCGGTCATCCACCTATTCTTCCTCCACCAAACTGGTTCTAACAAACCTACGGGAATAGAATCAAA

Linckia\_Ishigaki-11 G.....T.....T..AG.A...T.A..AA.A..T.....T..A.....A.......AA..A..A.....T..A.TC...T.G........

Asterias\_A1 ......T..TC.A..AT.G..CT.AG.A..GG.T..T..CC....T..T.....G..G..A..A.....C..A..T..T..T.....T.C

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 GTTTGATAAGACCCCCTTCCACACCTACTTTTCCTATAAGGACCTCACGGGGTTTGTAGCTCTATTTACCCTGATAAGCGCAATAGTTCT

Linckia\_Ishigaki-11 ......C...G....T..T..T..T..T..C..AAC.........A..A..T..CA.TAT.T......TTT..C....ATGTG.T.....

Asterias\_A1 T...........A..T..T.....T.....C..TAC.........T..C..A...A.CATAT......TTGCCT..TCTT.T.....AT.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 TTTATCCCCAACCTTACTTAGAGACCCCGAAAAATTTAAACCCGCTAACCCTTTAGTTACACCAGTTCACATCCAACCGGAATGATACTT

Linckia\_Ishigaki-11 AC.G.....TG..C..T.AG.T.....A.....C.....C..T.....T..C........C.....A..T..T.....T.....G..T..

Asterias\_A1 A.....T......C.CT.A........T...........T..A..............A..C..TC.C........G..T..G........

Acanthaster\_NC\_007788.1 ....................................C.....................................................

Acanthaster\_M2 CCTTTTCGCCTACGCGATCCTCCGATCCATCCCCAAAAAGTTAGGAGGCGTAATAGCCTTATTAGCATCAATCCTCATCTTGTTCATGGT

Linckia\_Ishigaki-11 T..A..T..T.....T..A..T.....A..T..T..............A..TG.G......C.T.....T.....TG.A..A....CA..

Asterias\_A1 ...A..T..A.....A..T..G..C.....A..G..............G..TT....T..GC.C..T..T..TT.GG....A..TG.A..

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CCCAATCCTCCACACATCAAACAACCAAGCTAGCACCTTTCGACCTGTTTCACAAAGACTCTTCTGATGTCTTACCACCATCTTCCTGTT

Linckia\_Ishigaki-11 T...T.T..T.....G..T..T........C.AA..A..C..T..C.C........C...A..T...CT...G..A.GGG.A..TA.AA.

Asterias\_A1 ......T..T.....T..C.....T.....C.AT.....C..C..A.CC..T...TCTT.T......AT...C.TTT.AG.G..TA.TA.

Acanthaster\_NC\_007788.1 ..........................................................................................

Acanthaster\_M2 CCTAACATGAATAGGAAGGCAACCCGTAGAAGACCCATTCATCCTCCTCGGGCAAATAGCCTCAACGGCTTACTTCCTCTTGTTCTTGTT

Linckia\_Ishigaki-11 T.....T...........T.....A..............T..T..G..T..A.....TA.A....TTAT...T...TCTC.A..TG.AA.

Asterias\_A1 .T....T..G........A..............A..C..T..TA.T..A..A.....TT....T.TTTTG.....TA.GC.A..T..AC.

Acanthaster\_NC\_007788.1 ..........................................................................................

 Cyt b->|

Acanthaster\_M2 CGCGATTCCTCTAACATCAGAACTAGAGAAAAAGCTGATTTTCT

Linckia\_Ishigaki-11 T.T.T.C..A.....G.....GA.....................

Asterias\_A1 TTTT......T.....G.CC..G.T..A.....TT.......T.

Acanthaster\_NC\_007788.1 ............................................