

Séquences alignées de l'ARNs 16s du tube digestif des amphipodes *Gammarella fucicola*, *Gammarus insensibilis* et *aequicauda*, *Onesimoides mindoro* et *sandroi* repris sur les gels DGGE.

*Gammarella fucicola*

**GF\_Es-a**

T---GATCCA GCCATGCCGC GTGAGTGATG -AAGGCCCTA GGGT---TGT AAAGCTCTTT  
CGCCGGT-GA AGATAA----- -TGACGGTAA CCGWAAAGA  
ARCYCCGGCT AACTYCGTGC CAGCAGCCGC GGTAATACGA AGGGGGCTAG CGTTGTTTCGG  
AATTACTGGG CGTAAAGCGC RCGTAGGCCG AYTRTTAAGT YRGGGGTGAA ATCCCGGGGC  
TCAACCCYGG AACTGCCTTT GATACTGGYA GWCTTGAGTT CGAGAGAGGT GAGTGGAATT  
CCKAGTGTAG AGGTGAAATT CGTAGATATT CCGARGAACA CCAGTGCGGA AGGCGGCTCA  
CTGGCTCGAT ACTGACGCTG AGGTGCGAAA GCGTGGGGAG CAAACAGGAT TARATACCCT  
GGTAGTCCAC GCCGTAAACG ATGA??GCTA GCCGTCGGGT A-GCATRCTA YT-CGGTGRC  
GCASCTAACG CATTAAGCTY TCCGCCTGGG GAGTA-CGGT CGCAAGATTA AAAC

**GF\_Pp-a**

C--TGACGGA GCGACGCCGC GTGGGTGAG- -AATGCCGAG AGGT---TGT AAAGCCCTTT  
TTTCACA-GA AGAATAATGA CTCGAGGTAA TGCGGATCAK ATGACGTTAT GTGAAGAATA  
AGCACCGGCC AATTACGTGC CAGCAGCCGC GGTAACACGT AAGGTGCGAG CGTTGTTTCGG  
AATTATTGGG CGTAAAGGGC TCGTAGGCCG CCTACCAAGT CTCTCGTGAA AGACCAGGGC  
TCAACCCCTGG GAACGCGAGG GAAACTGGTA GGCTTGAATC TTGGAGGGGG TACTGGAATT  
CCTGGTGTAG GGGTGAATC TGTTGATATT AGGAAGAACA CCGGAGGCGA AGGCGAGTAC  
CTGGTCATAG ATTGACGCTG ATGAGCGAAA GCGTAGGTAG CGAACAGGAT TAGATACCCT  
GGTAGTCTAC GCCGTAAACG ATGTGCACTT GATGGTGGGG CCGTTTCGGT TT-CACTGTC  
GAAGCTAACG CGTTAAGTGC ACCGCCTGGG GAGTA-CGCC GGCAACGGTT AAAC

**GF\_Pp-b**

T-----GCCGC GTGTATGAG- -AAGGCCTTC GGGT---TGT AAAGTACTTT  
CAGTAGT-GA GGAAGATGTT GTAGTTAATA GCTGCAATGT TTGACGTTAG CTACAGAAGA  
AGCACCGGCT AACTCCGTGC CAGCAGCCGC GGTAATACGG AGGGTGCAAG CGTTAATCGG  
AATTACTGGG CGTAAAGCGT ACGCAGGCCG CTTATTAAGC CAGATGTGAA AGCCCTGGGC  
TCAACCTAGG AATAGCATT GAACTGGTA AGCTAGAGTG TTGAAGAGGC GAGTAGAATT  
CCTAGTGTAG CCGTGGAATG CGTAGATATT AGGAGGAATA CCAGTGCGGA AGGCGGCTCG  
CTGGTCAAAC ACTGACGCTC ATGTACGAAA GCGTGGGTAG CAAACAGGAT TAGATACCCT  
GGTAGTCCAC GCCGTAAACG ATGTCTACTT GAAGTGTGC- --CGATTGAG GT-GCGTTTT  
GAAGCTAACG CGATAAGTAG ACCGCCTGGG GAGTA-CGGC CGCAAGGCTA AAAC

**GF\_Pp-c**

T-----GCCGC GTGTATGAAG -AAGGCCTTC GGGT---TGT AAAGTACTTT  
CAGTCGT-GA GGAAGGGTAT GCAGTTAATA GCTGTATATT TTGACGTTAG CGACAGAAGA  
AGCACCGGCT AACTCCGTGC CAGCAGCCGC GGTAATACGG AGGGTGCGAG CGTTAATCGG  
AATTACTGGG CGTAAAGCGC ATGCAGGTGG TTCATTAAGT CAGATGTGAA AGCCCGGGGC  
TCAACCTCGG AACCGCATT GATACTGGTG GGCTAGAGTG CTGTAGAGGG GGGTAGAATT  
TCAGGTGTAG CCGTGAAATG CGTAGAGATC TGAAGGAATA CCGGTGGCGA AGGCGGCCCC  
CTGGACAGAC ACTGACACTC AKATGCGAAA GCGTGGGGAG CAAACAGGAT TAGATACCCT  
GGTAGTCCAC GCCGTAAACG ATGTCTACTT GGAGGTTGTT CCCTTGAGGA GT-GGCTTTC  
GTAGCTAACG CGTTAAGTAA ACCGCCTGGG GAG-A-CGGT CGCAAGATTA AAAC

**GF\_Pp-d**

G----- -CCGC GTGTGTGAAG -AAGGCCTTA GGGT---TGT AAAACACTTT  
CAACTGT-GA AGATGA----- -TGACGGTAA CAGTAGAAGA  
AGCTCCGGCT AACTCCGTGC CAGCAGCCGC GGTAATACGG AGGGAGCTAG CGTTGTTCGG  
AATTACTGGG CGTAAAGAGC ACGTAGGCGG CGAGACACGT CAGAGGTGAA ATCCCAAGGC  
TTAACCTTGG AACTGCCTTT GATACGGTAT CGCTAGAAAT TTAGAGGGGT TAGTGGAATT  
CCAAGTGTAG AGGTGAAATT CGTAGATATT TGGAAGAACA CCAGAGGCGA AGGCGACTAA  
CTGGCTAAAT ATTGACGCTG AGGTGCGAAA GTGTGGGGAG CGAACGGGAT TAGATACCCC  
GGTAGTCCAC ACCGTAAACG ATGAGTGCTA GCTGCTGGA--ATTTAAAT TT-CAGTGGC  
GCAGCTAACG CATTAAAGCAC TCCGCCTGGG GAGTA-CGGT CGCAAGATTA AAACCTCAAG

**GF\_Pp-e**

C----- ---ATGCCGC GTGAATGATG -AAGGTTTTTC GGAT---CGT AAAGTTCTGT  
TGTAAGG-GA AGAAATGTTA TATTAGGAAA TGAATATAGC TTGACGGTAC CTTGCTAGAA  
AGGGACGGCT AACTACGTGC CAGCAGCCGC GGTAATACGT AGGTCCCGAG CGTTATCCGG  
AATTATTGGG CGTAAAGAGC ATGTAGGCGG TAAAATAAGT CTGGTGTGAA ATCTAGTGGC  
TCAACCACTA AATTGCATCG GAAACTGTTT AACTAGAATA CTGGAGGGGC AAGTGAATT  
CCATGTGTAG CGGTGAATG CGTAGATATA TGGAGGAACA CCAATGGCGA AGGCAGCTTG  
CTGGACAGAG ATTGACGCTG AGATGCGAAA GTGTGGGGAG CAAACAGGAT TAGATACCCT  
GGTAGTCCAC ACCGTAAACG ATGAGTGCTA GTTGTGGG-----ATAA CC-CAGTAAC  
GAAGCTAACG CATTAAAGCAC TCCGCCTGGG GAGTA-CGGT CGCAAGGCTG AAACCTCA

**GF\_Pp-f**

C----- --CATGTCCG GTGAAGGAAG ACGGTTCTAT GGAT---TGT AAACCTCTTT  
TATAAGG-GA ATAAAGAAA CTACGAGTAG ATTAT----- -TGAATGTAC CTTATGAATA  
AGCATCGGCT AACTCCGTGC CAGCAGCCGC GGTAATACGG AGGATGCGAG CGTTATCCGG  
ATTTATTGGG TTTAAAGGGT GCGTAGGCGG ACTTATAAGT CAGTGGTGAA ATACTGCAGC  
TCAACTGTAG TACTGCCATT GATACTGTAT GTCTTGAATT TAGATGAGGT AGGCGGAATG  
TGTTGTGTAG CGGTGAATG CATAGATATA ACACAGAACA CCGATTGCGA AGGCAGCTTA  
CTAAGCTATA ATTGACGCTG ATGCACGAAA GCGTGGGTAG CGAACAGGAT TAGATACCCT  
GGTAGTCCAC GCCGTAAACG ATGATTACTC GTTGTGGC--GATATATA GT-CAGCGAC  
CAMGCGAAAG CATTAAAGTAA TCCACCTGGG GAGTA-CGTT GGCAACAATG AAACCTCA

***Gammarus insensibilis et aequicauda***

**GA1\_Es-a**

G-----C GTGTGTGAG- -AAGGCCTGC GGGT---TGT AAAGCACTTT  
CAGTAGG-GA AGAAAGGGTA GAGGTTAATA GCTTCTAAAT TTGACGTTAC CTACAGAAGA  
AGCACCGGCT AACTCCGTGC CAGCAGCCGC GGTAAATACGG AGGGTGCAAG CGTTAATCGG  
AATTACTGGG CGTAAAGCGC GCGTAGGCGG CTATTTAAGT CGGATGTGAA ATCCCCGGGC  
TCAACCTGGG AACTGCATAC GATACTGGGT ARCTAGAGTA TGTTAGAGGS AAGTGAATT  
CCGGGTGTAG CGGYGAAATG CGTAAATATC CGGARGARCA CCARTGGCGA AGGCGACTTG  
CTGGGACAAT ACTGACGCTG AGGWGCRAAA GCGTGGGGAG CAAACAGGAT TARATACCCT  
GGTAGTCCAC GCCGTAAACG ATGTCAACTA GCCGTTGGGC GCTTTAAGTG CT-TGG?GGC  
GCAGCTAACG CGATAAGTTG ACCGCCTGGG RAGTA-CGCC GGCAACGGTA AAACCTCAAAG  
GAAATTGACG

**GI-GA\_Es-b**

T-----GCCGC GTGAGTGATG -AAGGCCTTA GGGT---CGT AAAGCTCTTT  
CGCYAGG-GA AGATAA----- -TGACGGTAC CTGGTAAAGA  
AACCCCGGCT AACTCCGTGC CAGCAGCCGC GGTAAATACGG AGGGGGTTAG CGTTGTTCGG  
AATTACTGGG CGTAAAGCGC ACGTAGGCKG ATTAGTCAGT CAGRGGTGAA ATCCCAGGGC  
TCAACCTGG AACTGCCTTT GATACTGBTA GTCTWGAGTT CGAGAGAGGT GAGTGAATT  
CCGAGTGTAG AGGTGAAATT CGTAGATATT YGGAGGAACA CCAGTGGCGA AGGCGGCTCA  
CTGGCTCGAT ACTGACGCTG AGGTGCGAAA GTGTGGGGAG CAAACAGGAT TAGATACCCT  
GGTAGTCCAC ACCGTAAACG ATGAATGCYA GTCGTCRGGK A-GCATGCCC TT-TGGTGAC  
GCACCTAACG GATTAAGCAT TCCGCCTGGG GAGTA-CGGT CGCAAGATTA AAACCT

**GA1\_Es-c**

T-----TC GGAT---CGT AAAGTGCTTT  
CAGCAGG-GA AGAARA?RG- -TGACGGTAC CTGCAGAARA  
ASTGRGGCT AACTACGTGC CAGCMGCCGC GGTAMTACGT ATGTCACAAG CGTTATCCRG  
AATTAKTGGG CGTAAAGGGC ATCTAGGCGG TTTATCAAGT CGACGGTGAA MACTTGTGGC  
TCAMCCATAA GATTGCCGAC GAAWCTGATA SACTAGAGTA CTGGAGAGGT GGGCGGAECT  
ACATGAGTAG AGGTGAAATT CGTA?ATATR TGTAAGAATG CCGATGATGA A?ATAGCTCA  
CTGGACAGTA ACTGACGCTG AAGTGCGAAA GCTAGGGGAG CAAACRRGAT TAGATACCST  
GGTASTCCTA GCCGTAAACG ATGATCACTG GGTGTAGGCA --GGTAGACT GT-CTGTGCC  
GAAGCTAACG CAATAASTGA TCCGCCTGGG GAGTA-CGAC CGCAAGGTTG AAAC

**GA1\_Es-d**

T-----GCCGC GTGCAGGATG AATGCCCTAT GGGT---AGT AAAGTGCTTT  
TATACAG-GA AGAAAAAAGG GTACGTGTAC CCTAC----- -TGACGGTAC TGTAAGAATA  
AGGACCGGCT AACTCCGTGC CAGCAGCCGC GGTAAATACGG AGGGTCCGAG CGTTATCCGG  
AATTATTGGG TTTAAAGGGT CCGTAAGCGG GTCGATAAGT CAAAGGTGAA AGTCTGCCGC  
TCAACGGTAG AATTGCCTTT GATACTGTCTR GTCTTGAGTT ATAGTGAAGT TGCCGGAATA  
TGTAGTGTAG CGGTGAAATG CATAGATATT ACATAAAACA CCTATTGCGA AGGCAGGTGA  
CTAACTATAT ACTGACGCTG ATGGACGAAA GCGWGGGGAG CGAACAGGAT TAGATACCCT  
GGTAGTCCAC GCCGTAAACG ATGGATACTA GCTGTCCGGG ACCTTGAGTT CT-GGGCGGC  
CRAGCGAAAG TGATAAGTAT CCC

**GA1\_Es-e**

G-----	-CTATACCGC	GTGGACGATG	-AAGGCCTAA	GGGT---TGT	AAAGTCCTTT
CATCAGG-GA	AGATAA----	-----	-----	-TGACGGTAC	CTGAAGAAGA
AGTCCCGGCT	AACTCCGTGC	CAGCAGCCGC	GGTAATACGG	GGGGGGCAAG	CGTTGTTCGG
CATTATTGGG	CTTAAAGGGC	GCGTAGGCTT	ATTAGTAAGT	CGATAGTTAA	ATGCAGATGC
TCAACATCTG	ACCTGCTATC	GATACTGCTA	GTATAGAGTT	TGGGATAGGT	GAACAGAATT
TCGAGTGGAG	AGGTGAAATT	CATAGATATT	CGAAGGAATA	CCGGTAGCGA	AGGCGGTTCA
CTGGAACAAC	ACTGACGCTG	AGGCGCGAAA	GCGTGGGTAG	CAAACAGGAT	TAAATACCCT
GGTAGTCCAT	GCTGTAAACG	ATGAGAGCTA	ATTGTCGGC-	--TATTATTA	GT-CGGTGAT
GCAGCGAAAG	CATTAAGCTC	TCCGCCTGGG	GAGTA-CGGT	CGCAAGATTA	AAACTCA

**GI-GA\_Es-f**

C-----	-----	GTGCAGGATG	-ATGCCCTAT	GGGT---TGT	AAACTGCTTT
TATATGG-GA	AGAAAAWCTC	TCATTTATGA	KAGAC-----	-TGACGGTAC	CWTACGAATA
AG?ACCGGCT	AACTCCGTGC	CAGCAGCCGC	GGTAATACGG	AGGGTGCAAG	CGTTATCCGG
AATCACTGGG	TTTAAAGGGT	GAGTAGGCGG	ATMAWTAAGT	CARARGTGAA	RGCTTTCMSC
TTAACTGGA?	AAGTGCCTTT	GATACTG?TT	TGCTTGAATT	??TGTAGGT	TAGCGGAATG
AGTCATGTAG	CGGWGAAATG	CATAGATATG	ACTTAWAACA	CCAATTGCGA	AGGCAWCTAG
MTGGGCTTGT	ATTGACGCTG	AGGCACGAAA	SCGTGGGGAG	CGAACAGGAT	TAGATACCCT
GGTAGTCCAC	GCCCTAAACG	ATGCTTACTC	GATGTTT---	--GTATTTAT	AT-GAGCATC
CAAGGGAAAC	CGTTAAGTAA	SCCACCTGGG	GAGTA-CGTT	CGC	

**GI-GA\_Es-g**

G-----	-----CCGC	GTGCAGGAGA	-CTGCCCTAT	GGGT---TGT	-AACTGCTTT
TATACAG-GA	GAAAACACTA	CCTCGTGAGG	TAGCT-----	-TGACGGTAC	TGTAAGAATA
AGGACCGGCT	AACTCCGTGC	CAGCAGCCGC	GGTAATACGG	AGGGTCCGAG	CGTTATCCGG
AATCAATTGGG	TTTAAAGGGT	CCGCAGGCGG	TCAATTAAGT	CAGAGGTGAA	ATCCCATAGC
TTAACTATGG	AACTGCCTTT	GATACTGGTT	GACTTGAGTT	ATACGGAAGT	AGATAGAATA
AGTAGTGTAG	CGGTGAAATG	CATAGATATT	ACTTAGAATA	CCGATTGCGA	AGGCAGTCTA
CTACGTATAT	ACTGACGCTC	ATGGACGAAA	GCGTGGGGAG	CGAACAGGAT	TAGATACCCT
GGTAGTCCAC	GCCGTAAACG	ATGGACACTA	GTTGTTTGG-	----ATTTAT	CT-AAGTGAC
TAAGCGAAAG	TGATAAGTGT	CCCACCTGGG	GAGTA-CGAT	CGCAAGATTG	AAACTCAAAG

**GI4\_Cp-c**

G-----	-----CCGC	GTGGAGGATG	-ACACRTTTT	GGTG---CGT	AAACTCCTTT
TATATAG-GA	AGATAA----	-----	-----	-TGACGGTAC	TATATGAATA
AGCACCGGCT	AACTCCGTGC	CAGCAGCCGC	GGTAATACGG	AGGGTGCAAG	CGTTACTCGG
AATCACTGGG	CGTAAAGAGC	GTGTAGGCGG	ATAGTTAAGT	TTGAAGTGAA	ATCCAATGGC
TCAACCATTG	AACTGCTTTG	AAAAGTATT	ATCTAGAATA	TGGGAGAGGT	AGATGGAATT
TCTGGTGTAG	GGGTAAAATC	CGTAGAGATC	AGAAGGAATA	CCGATTGCGA	AGGCGATCTA
CTGGAACATT	ATTGACGCTG	A?ACGCGAAA	GCGTGGGGAG	CAAACAGGAT	TAGATACCCT
GGTAGTCCAC	GCCCTAAACG	ATGTACACTA	GTTGTTGTGA	R-GCTAGACC	TTGCAGTAAT
GCAGTTAACA	CATTAAGTGT	ACCGCCTGGG	GAGTA-CGGT	CGCAAGATTA	AAACT

**GI-GA\_Pp-a**

T----- -GCCGC GTGAGTGATG -AAGGCCTTA GGGT---TGT AAAGCTCTTT  
CGYCSGG?GA YGATAA----- -TGACGGTAC CTGGTAAAGA  
AACCCCGGCT AACTCCGTGC CAGCAGCCGC GGTAAATACGG AGGGGGTTAG CGTTGTTCGG  
AATTACTGGG CGTAAAGCGC ACGTAGGCGG ATTAKTAAGT CAGGGGTGAA ATCCCGGGGC  
TCAACCCYGG AACTGCCTTT GATACTGSTA GTCTTGAGTT CGAGAGAGGT GAGTGAATT  
CCGAGTGTAG AGGTGAAATT CGTAGATATT CGGAGGAACA CCAGTGCGCA AGGCGGCTCA  
CTGGCTCGAT ACTGACGCTG AGGTGCGAAA GYGTGGGGAG CAAACAGGAT TAGATACCCT  
GGTAGTCCAC ACCGTAAACG ATGAATGCCA GCCGTCGGGK A-GCATGCTK TT-CGGTGAC  
GCACCTAACG SATTAAGCAT TCCGCCTGGG GAGTA-CGGT CGCAAGATTA AAACTC

**GI-GA\_Pp-b**

T---GATGCA GCCATGCCGC GTGTATGAG- -AAGGCCTTC GGGT---TGT AAAGTACTTT  
CAGTCGT-GA GGAAGGGTGT GTAGTTAATA GCTGCGCATT TTGACGTTAG CGACAGAAGA  
AGCACCGGCT AACTCCGTGC CAGCAGCCGC GGTAAATACGG AGGGTGCGAG CGTTAATCGG  
AATTACTGGG CGTAAAGCGC ATGCAGGTGG TTCATTAAGT CAGATGTGAA AGCCCGGGGC  
TCAACCTCGG AACCGCATTT GAAACTGTTG GGCTAGAGTG CTGTARAGGG GGGTAGAATT  
TCAGGTGTAG CGGTGAAATG CGTARAGATC TGAAGGAATA CCGGTGGCGA AGGCGGCCCC  
CTGGACAGAC ACTGACACTC AGATGCGAAA GCGTGGGGAG CAAACAGGAT TARATACCCT  
GGTAGTCCAC GCCGTAAACG ATGTCTACTT GGAGGTTGTG GCCTTGAGCC GT-GGCTTTC  
GGAGCTAACG CGTTAAGTAA ACCGCCTGGG GAGVA?CGGT CGCAAGATTA AAACTCAAAG

**GI-GA\_Pp-c**

G----- -CTATACCGC GTGGACGATG -AAGGCCTAA GGGT---TGT AAAGTCCTTT  
CATCAGG-GA AGATAA----- -TGACGGTAC CTGAAGAAGA  
AGTCCCGGCT AACTCCGTGC CAGCAGCCGC GGTAAATACGG GGGGGGCAAG CGTTGTTCGG  
CATTATTGGG CTAAAGGGC GCGTAGGCTT ATTAGTAAGT CGATAGTTAA ATGCAGATGC  
TCAACATCTG ACCTGCTATC GATACTGCTA GTATAGAGTT TGGGATAGGT GAACAGAATT  
TCGAGTGGAG AGGTGAAATT CATAGATATT CGAAGGAATA CCGGTAGCGA AGGCGGTTCA  
CTGGAACAAC ACTGACGCTG AGGCGCGAAA GCGTGGGTAG CAAACAGGAT TAGATACCCT  
GGTAGTCCAT GCTGTAAACG ATGAGAGCTA ATTGTCGGC- --TATTATTA GT-CGGTGAT  
GCAGCGAAAG CATTAAGCTC TCCGCCTGGG GAGTA-CGGT CGCAAGATTA AAACTCAA

Onesimoides sandroi et mindoro

**OS\_Es-a**

T----- -GCCGC GTGAGTGATG -AAGGCCTT? GGGT---YGT AAAGCTCTTT  
CGCCTGY-GA ?GATAA----- -TGACGGTAC YWGGWAAAGA  
AGCCCCGGCT AACTCCGTGC CAGCAGCCGC GGTAATACGG AGGGGRCTAG CGTTGTTCGG  
AATTACTGGG CGTAAAGCGC ACGTAAGCGG ATT?KTAAGT ?RGRGGTGAA ATCCCAGGGC  
TCAACCCTGG AACTGCCTTY TAAACTS?TA ATCTWGA?TT CGA?AGAGGW RAGTGGAATT  
CCTAGTGTAG AGGTGAAATT CGTAKATATT AGGAGGAACA CCAKTGGCGA AGGGRCTCA  
CTGGCTCGAT ACTGACGCTG A?GTGCKAAA GCGTGGGGAG CAAACAGGAT TAAATACCCT  
GGTAGTCCAC RCCGTAAACK ATGAATGCCA GYCGTCGGGT A-GCATGCTA TT-CGGGGAC  
?CACCTAACG ?ATTGA?CAT TCCGCCTGGG GAGTA-CGGT CGCAAGATTA AAACCTCAAG

**OS\_Pp-a**

C---TGATCC AGCATTCTGT GTGCACGATG -AAGGTCTTC GGAT---TGT AAAGTGCTTT  
CAGGTGG-GA AGAAGAAAAG- -TGACGGTAC CACCAGAAGA  
AGCGACGGCT AAATACGTGC CAGCAGCCGC GGTAATACGT ATGTCGCAAG CGTTATCCGG  
AATTATTGGG CGTAAAGCGA GTCTAGGCGG CTTGTAAAGT CAGATGTGAA ACTGCGGGGC  
TCAACTCC-G TATTGCGTTT GAAACTGGCA GGCTAGAGTA CTGGAGAGGT GGGCGGAACT  
ACAAGTGTAG AGGTGAAATT CGTAGATATT TGTAGGAATG CCGATAGTGA AGACAGCTCA  
CTGGACAGAT ACTGACGCTA AAGCTCGAAA GCGTGGGGAG CAAACAGGAT TAGATACCCT  
GGTAGTCCAC GCCGTAAACG ATGTTCACTG GGTGTAGGG- --AGTCGAAT CT-CTGTGCC  
GAAGCTAACG CGATAAGTGA ACCGCCTGGG GAGTA-CGCA CGCAAGTGTG AAACCTCAAAG  
GAAATTGACG G

**OS\_Pp-b**

A----- -TACCGC GTGTGTGAAG -AAGGCCTTA GGGT---TGT AAAGCACTTT  
CAGTAGT-GA GGAAACGGGT GAAGTTAATA TCTTCATCAA TTGACGTAA CTACAGAAGA  
AGCACCGGCT AACTCCGTGC CAGCAGCCGC GGTAATACGG AGGGTGCAAG CGTTAATCGG  
AATTACTGGG CGTAAAGCGC GCGTAGGCGG TTATTTAAGT CAGATGTGAA AGCCCTGGGC  
TCAACCTAGG AACTGCATTT GAAACTGAAT AACTTGAGTT TGGTAGAGAA TGATGGAATT  
TCCAGTGTAG CAGTGAATG CGTAGAGATT GGAAGGAATA TCGATGGCGA AGGCAGTCAT  
TTGGGCCAAT ACTGACGCTG AGGTGCGAAA GTGTGGGTAG CGAACGGGAT TAGATACCCC  
GGTAGTCCAC ACCGTAAACG ATGTCAACTA GGTGTGCGGC --CCTTGAGG TT-CGGTGCC  
GCAGCTAACG CATTAAAGTTG ACCGCCTGGG GAGTA-CGCA CGCAAGTGTG AAACCT

**OS\_Pp-c**

G----- -T GTGCACGATG AAAGGTCTTC GGAT---TGT AAAGTGCTTT  
CACGGGG-GA GAAAAAAG- -TGACGGTAC CACCATAAGA  
ASCACGGCT AARTACGTGC CAGCAGCCGC GGTAATACGT RTGTCGCAAG CGTTATCCGG  
AATTRTTGGG MGTRAAGCGA GTCTAGGCGG CTTGTAAAGT CAGATGTGAA ACTGCGGGGC  
TCAACTCC-G TATTGCGTTT GAAACTGGCA GGCTAGAGTA CTGGAGAGGT GGGCGGAACT  
ACAA?TG TAG AGGTGAAATT CGTARATATT TGTAGGAATG CCGATAGTGA AGACAGCTCA  
CTGGACAGAT ACTGACGCTA AAGCTCGAAA GCGTGGGGAG CAAACAGGAT TARATACCCT  
GGTAGTCCAC GCCGTAAACG ATGTTCACTG GGTGTAGGG- --AGTCGAAT CT-CTGTGCC  
GAAGCTAACG CGATAAGTGA ACCGCCTGGG GAGTA-CGCA CGCARGTGTG AAACCTCAAAG  
GAATTGAC

**OS\_Pp-d**

AGCCTGATCA GCCATCCCGC GTGCAGGAGA -CGGCCCTAT GGRT---TGT AAAGTGCTTT  
TCTATGG-GA ATAAAMCATT TCACGTGTGA AATGM----- -TGAAGGTAC CATARGAATA  
AGCACCGGCT AACTCCGTGC CAGCWCCGC GGTAATACGG AGGGTGCAAG SGTATCCGG  
ATTTATTGGG TTTAAAGGGT CCGTAGRCGG ACTAATAAKT CAGTGGTGAA ATCCTATCGC  
TTAACGATAG AACTGCCATT GATACTGTTA GTCTTGAGTG AGGTTGTAGT TGCTGGAATG  
TG TAGTGTAG CGKKGAAATG CATAGATATT ACACAGAACA CCAATTGCGA AGGCAAGTGA  
CTAAGCCTTA ACTGACGCTG AGGGACGAAR RCGWGGGGAG CGAACAGGAT TAGATACCCT  
GGWAGTCCAC KGCGTAAACG AWGATTACTC KYTTTCGGG- --TTTTAAGA CT-CRGARAC  
CAAGCGAAAG TGATAA?TAA TCCACCTGGG GAGTA-CGT

**OS\_Pp-e**

T----- ACCGC GTGAAGGAAG ACTGTCCTAT GGAT---TGT AACTTCTTT  
TATATGG-GA GGAATAAGAT CTACGTGTAG ATTGA----- -TGACAGTAC CATATGAATA  
AGCACCGGCT AACTCCGTGC CAGCAGCCGC GGTAATACGG AGGGTGCAAG CGTTATCCGG  
ATTTATTGGG TTTAAAGGGT CCGTAGGCTG TTTTATAAGT CAGTGGTGAA ATCCTATCGC  
TCAACGATAG CACTGCCATT GAAACTGTAG GACTAGAATT ATTTTGAAGT TGGCGGAATG  
AGTAATGTAG CCGTGAAATG CATAGATATT ACTCAGAACA CCAATTGCGA AGGCAGCTGA  
CTAAGAATAT ATTGACGCTG ATGGACGAAA GCGTAGGTAG CGAACAGGAT TAGATACCCT  
GGTAGTCTAC GCCGTAAACG ATGGATACTA GTTGTCTGGGA A-AATAGAGA CT-CGGTGGC  
TAAGCGAAAG TGATAAGTAT CCCACCTGGG GAGTA-CGAT CGCAAGATTG AACT

**OM2\_CP-b**

A----- -TG -AAGGCCCTA GGGT---TGT AAAGATCTTT  
CGCCGGT-GA AGATAA----- -TGACGGTAA CCGGTAAAGA  
AGCTCCGGCT AACTTCGTGC CAGCAGCCGC GGTAATACGA AGGGGGCTAG CGTTGTTCGG  
AATTACTGGG CGTAAAGCGC GCGTAGGCGG TTTGTATAGT TGGGGGTGAA ATCCCAGGGC  
TCAACCCTGG AACTGCCTCC AATACTGACA GACTAGAGAC CGAGAGAGGT GAGTGGAACT  
CCTAGTGTAG AGGTGAAATT CGTAGATATT AGGAAGAACA CCAGTGGCGA AGGCGGCTCA  
CTGGCTCGGT ACTGACGCTG AGGTGCGAAA GCGTGGGGAG CAAACAGGAT TAGATACCCT  
GGTAGTCCAC GCCGTAAACG ATGAGAGCTA GCTGTCTGGGT A-GTATACTA CT-CGGTGGC  
GCAGCTAACG CATTAAAGCTC TCCGCCTGGG GAGTA-CGGT CGCAAGATTA AACTCAAAG  
AAATTTGACG G

**OM1\_CP-c**

T----- GCCGC GTGAGTGATG -AAGGCCTTA GGGT---KGT AAAGCTCTTT  
CRCCRGG-GA TGATAA----- -TGACRGTAC CTGGWAAAGA  
AACCCCGGCT AACTCCGTGC CAGCAGCCGC GGTAATACGG AGGGGGYTAG CGTTGTTCGG  
AATTACTGGG CGTAAAGCGC ACGTAGGCGG ATTATWAAGT CAGAGGTGAA ATCCCAGGGC  
TCAACCCYGG AACTGCCTTT GATACTGCTR GTCTTGAGTT CGAGAGAGGT GAGTGGAACT  
CCGAGTGTAG AGGTGAAATT CGTAGATATT CGGAGGAACA CCAGTGGCGA AGGCGGCTCA  
CTGGCTCGAT ACTGACGCTG AGGTGCGAAA GYGTGGGGAG CAAACAGGAT TAGATACCCT  
GGTAGTCCAC RCCGTAAACG ATGAATGCYA GACGTCGGGG A-GCTTGCT? TT-CGGTG?C  
GCACCTAACG GATTAAGCAT TCCGCCTGGG GAGTA-CGGT CGCAAGATTA AACTCAAG

**OM2\_CP-d**

T----- TCG- -----G -AAGGGTTCA GGATAAACTC AAAGGAATT- --  
GACGG-AA AGAAATCGCA CTTACTAATA TTAGGTGTGG ATGACGGTAC CGGAAGAATA  
AGGACCGGCT AACTACGTGC CAKCAGCCGC GGTAATACGT AKGGTCCAAG CGTTAATCGG  
AATTACTGGG CGTAAAGCGT GCGCAGGCGG TTGTGCAAGA CCGATGTGAA ATCCCAGGGC  
TTAACCTGGG AATTGCATTG GTGACTGCAC GGCTAGAGTG TGTCARAGGG GGTAGAATT  
CCACGTGTAG CARTGAAATG CGTAAAGATG TGGAGGAATA CCGATGGCGA AGGCARCCC  
CTGGGATAAC ACTGACGCTC ATGCACRAAA GCGTGGGGAG CAAACAGGAT TARATACCCT  
GGTAGTCCAC GCCCTAAACG ATGTCAACTA TGTGTTGGGG A-TTCATTTT CT-TAGTAAC  
GTAGCTAACG CGTGAAGTTG ACCGCCTGGG GAGT?-CGGT CGCARGATTA AACTCAAAG  
GAATTTGACG

**OM\_Pp-a**

G-TCTGATCC AGCATTCTGT GTGCACGATG -AAGGTCTTC GGAT---TGT AAAGTGCTTT  
CAGGTGG-GA AGAAGAAAG- ----- -TGACGGTAC CACCAGAAGA  
AGCGACGGCT AAATACGTGC CAGCAGCCGC GGTAATACGT ATGTCGCAAG CGTTATCCGG  
AATTATTGGG CGTAAAGCGA GTCTAGGCGG CTTGTTAAGT CAGATGTGAA ACTGCGGGGC  
TCAACTCC-G TATTGCGTTT GAAACTGGCA GGCTAGAGTA CTGGAGAGGT GGGCGGAACT  
ACAAGTGTAG AGGTGAAATT CGTAGATATT TGTAGGAATG CCGATAGTGA AGACAGCTCA  
CTGGACAGAT ACTGACGCTA AAGCTCGAAA GCGTGGGGAG CAAACAGGAT TAGATACCCT  
GGTAGTCCAC GCCGTAAACG ATGTTCACTG GGTGTAGGG- --GGTCGAAC CT-CTGTGCC  
GAAGCTAACG CGATAAGTGA ACCGCCTGGG GAGTA-CGCA CGCAAGTGTG AACTC

**OM\_Pp-b**

G----- --CATAACCGC GTGTGTGAG- -AAGGCCTTA ?GGT---TGT AAAGCASTTT  
 CAGTAKT-GA GGAAACGGAT GATGTTAATA GCATCATCAA TTGACGTTAA CTACAGAAGA  
 AGCACCGGCT AACTCCGTGC CAGCAGCCGC GGTAATACGG AGGGTGCAAG CGTTAATCGG  
 AATTACTGGG CGTAAAGCGC GCGTAGGCGG TTATTTAAGT CAGATGTGAA AGCCCTGGGC  
 TCAACCTAGG AACTGCATTT GAAACTGGAT AACTTGAGTT TGGTAGAGAA TGATGGAATT  
 TCCAGTGTAG CAGTGAAATG CGTAGAGATT GGAAGGAATA TCGATGGCGA AGGCAGTCAT  
 TTGGGCCAAT ACTGACGCTG AGGTGCGAAA GTGTGGGTAG CGAACGGGAT TAGATACCCC  
 GGTAGTCCAC ACCGTAAACG ATGTCAACTA GGTGTCGGGC --CCTTGAGG TT-CGGTGCC  
 GCAGCTAACG CATTAAAGTTG ACCGCCTGGG GAGTA-GSCA CGCAAGTGTA AAACTC

**OM\_Pp-c**

T-CTGATGCA GCCATGCCGC GTGTGTGAG- -AAGGCTTTC GGGT---TGT AAAGCACTTT  
 CAGTGGG-GA GGAAAGGGTR TGCGTTAATA GCGTRTRTCT GTGACGTTAC CCACAGAAGA  
 AGCACCGGCT AACTCCGTGC CAGCAGCCGC GGTAATACGG AGGGTGCGAG CGTTAATCGG  
 AATTACTGGG CGTAAAGCGC GCGTAGGTGG TTAATCAAGT CAGATGTGAA AGCCCAGGGC  
 TCAACCTTGG AACAGCATTT GAAACTGTTT AACTARAGTT TTGTAGAGGG TGGTARAATT  
 TCARGTGTAG CGGTGAAATG CRTAGAGATC TGAAGGAATA CCAGTGCGCA AGGCGGCCAC  
 CTGGACAAAG ACTGACACTG AGGCGCRAAG GCGTGGGTAG CAAACGGGAT TAGATACCCC  
 GGTAGTCCAC GCAGTAAACG ATGTCTATTA ?AAGTTTGTG GCTATATGCC GT-GGGTTTC  
 AAAGCTAACG CATTAAATAG ACCGCCTGGG GAGA?-?GC CGCARGGTTA AAACTCAAAG

**OM\_Pp-d**

T---GATCCA GCCATCCCGC GTGCAGGAGA -CGGCCCTAT GGGT---TGT AAAGTCTTT  
 TCTATAG-GA ATAAACCATT TCACGTGTGA ?ATGC----- -TGAAGGTAC TATAGGAATA  
 AGCACCGGCT AACTCCGTGC CAGCAGCCGC GGTAATACGG AGGRTGCAAG CGTTATCCGG  
 ATTTATTGGG TTTAAAGGGT CCGTAGGCGG ACTAATAAGT CAGWGGTGAA ATCCTATCGC  
 TTAACGATAR AACTGCCATT GATACTGTTA GTCTTGAGTG AGGTTGWAGT TGCTGGAATG  
 TGTAGTGTAG CGGTGAAATG CATAGATATT ACACAGAACA CCGATTGCGA AGGCAAGTGA  
 CTAAGCCTTA ACTGACGCTG AGGGACGAAA GCGTGGGGAG CGAACAGGAT TAGATACCCT  
 GGTAGTCCAC GCCGTAAACG ATGATTACTC GYTTTCGGG- --TTTTAGGA CT-CGGAGAC  
 CAAGCGAAAG TGATAAGTAA TCCACCTGGG GAGTA-CGTT CGAAAGAATG AAAGTCAA

**OM\_Pp-e**

T----- ACCGC GTGAAGGAAG ACTGTCCTAT GGAT---TGT AAAGTCTTT  
 TATATGG-GA GGAATAAGRC CTACGTGTAG GTTGA----- -TGACAGTAC CATATGAATA  
 AGCACCGGCT AACTCCGTGC CAGCAGCCGC GGTAATACGG AGGGTGCAAG CGTTATCCGG  
 ATTTATTGGG TTTAAAGGGT CCGTAGGCTG TTTTATAAGT CAGTGGTGAA ATCCTATCGC  
 TCAACGATAG CACTGCCATT GAAACTGTAG GACTAGAATT ATTTTGAAGT TGGCGGAATG  
 AGTAATGTAG CGGTGAAATG CATAGATATT ACTCAGAACA CCAATTGCGA AGGCAGCTGA  
 CTAAGAATAT ATTGACGCTG ATGGACGAAA GCGTAGGTAG CGAACAGGAT TAGATACCCT  
 GGTAGTCTAC GCCGTAAACG ATGGATACTA GTTGTGCGGA A-AATAGAGA CT-CGGTGCC  
 TAAGCGAAAG TGATAAGTAT CCCACCTGGG GAGTA-CGAT CGCAAGATTG AAAGTCAA