```
                      *        20         *        40         *        60         *        80         *       100
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : ACTGCGAGCTGATCAAGAACCTGGGCCTCACCCGCTCCGTGGACCGTACTCTCATCGGCTTCATGGGGTGCGCCGCGGCCATGAACGGCTTCCGCAACGCGAACG :  105
FvePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -
FsePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -

                 *       120         *       140         *       160         *       180         *       200         *
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : ACTTCGTGACTGCCAACCCCGGCAAGTACGCCCTGATGATCTGCGTCGAGCTTTCCTCGGTGCACACGACCTTCGACGACAACATCAACGACGCCATCCTCCACG :  210
FvePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -
FsePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -

                    220         *       240         *       260         *       280         *       300         *
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : CAATCTTCGCCGATGGGTGCGCCGCCGCCGTGCTCAAGGGTATCAAGAAGTCCGAGGCCCCCAAGGGAACCCTGGCGATCGTCGACAACCACGCGTGGCTCATGG :  315
FvePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -
FsePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -

               320         *       340         *       360         *       380         *       400         *       420
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : AGGGCACCGAGGATGGCATCACCCTCGCGATCAAGCCCAACGGCATCACCTGCACTCTCTCTAAGTTCCTGCCCCAGTACATCGCCAAGAACATCGCGTTCTTCG :  420
FvePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -
FsePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -

                      *       440         *       460         *       480         *       500         *       520
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : CCGACGGCTTCCTCAAGAAGCACAACCTCGGCCGCGATGACGTTGACTTCTGGTGCGTGCACCCCGGGGGACGCCGTATCATCGAGGAGGCGCAGAACGGGCTCG :  525
FvePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -
FsePKS_GH7 : ------------------------------------------------------------------------------------------CGCAGAACGGGCTCG :   15

                 *       540         *       560         *       580         *       600         *       620         *
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : GCCTCACGGAGGAGCAGACCGCGGATTCGTGGGCGGTGCTTGCCGAGTACGGGAACATGCTTTCACCGTCGGTGATGTTTGTGCTGTCCAGGGTGTTCAAGCGCC :  630
FvePKS_GH7 : ---------------------------------------------------------------------CGGTGATGTTTGTGCTGTCCAGGGTGTTCAAGCGCC :   36
FsePKS_GH7 : GCCTCACGGAGGAGCAGACCGCGGACTCGTGGGCGGTGCTTGCCGAGTACGGGAACATGCTTTCGCCATCGGTGATGTTTGTGCTGTCCAGGGTGTTCAAGCGCC :  120
```

```
                    640         *       660         *       680         *       700         *       720         *
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : ACAACGCCGCGCTCGCGCAAGGGAAGCCTGGCTACCAGACCGGCATGGCGTTCTCGTTTTCCCCGGGCGTGGGCGCCGAGGGTATCCTTCTCAAGCAGCTCTAAA :  735
FvePKS_GH7 : ACAACGCCGCGCTCGCGCAAGGGAAGCCTGGCTACCAGACCGGCATGGCGTTCTCGTTTTCCCCGGGCGTGGGCGCCGAGGGTATCCTTCTCAAGCAGCTCTAAA :  141
FsePKS_GH7 : ACAACGCCGCGCTCGCGCAAGGAAAGCCTGGCTACAAGACCGGCATGGCGTTCTCGTTTTCCCCGGGCGTGGGCGCCGAGGGTATTCTTCTCAAGCAGCTCTAAA :  225

               740         *       760         *       780         *       800         *       820         *       840
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : AGAAGCGCGAAAGGATTGGAGTTTGCGACACACCTCCGAGTAGTACATAACTGGAGGGTGTCAGGCGGAGAAAGGCCATCGTATAC---TGTAGTCACCGATGCG :  837
FvePKS_GH7 : AGAAGCGCGAAAGGATTGGAGTTTGCGACACA-CTCCGAGTAGTACATAACTGGAGGGTGTCAGGCGGAGAAAGGCCATCGTATAC---TGTAGTCACCGATGCG :  242
FsePKS_GH7 : AGGAGCGCGAAAGGATTGGAGATTGCGACACG-CTCCGAGTAGTACATAACTGGAGGGTGTTCGGCGGAGAAAGGCCATCGTATACTGTTGTAGTCACCGATGCG :  329

                      *       860         *       880         *       900         *       920         *       940
FvePKS_FWp : ----------------------------------------------TTGCACGTATGTCTCTGTTGC-------------------------------------- :   21
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : ATCCCATCACACCCGAGGTGGGCCACGGGTCAGCTCGTTTTGCATGTTGCACGTATGTCTCTGTTGCGTAAAATACCTTTTGAGGCGGCTTGCCGGTAAGGTTTT :  942
FvePKS_GH7 : ATCCCATCACACACGAGTTGGGGCACGGGTCAGCTCGTTTTGCATGTTGCACGTATGTCTCTGTTGCGTAAAATACCTTTTGAGGCGGCTTGCCGGTAAGGTTTT :  347
FsePKS_GH7 : ATCCCATCACACCCGAGTTGGGGCACGGGTCAGCTCGTTTTTTATGTTGCACGTATGTCTCTGTTGCGTAAAATACCTTTTGAGGCGGCTTGCCAGTAAGGTTTT :  434
                                                           ttgcacgtatgtctctgttgc

                 *       960         *       980         *      1000         *      1020         *      1040         *
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : ---------------------------------------------------------CCATCAGGTTATTCGCGC------------------------------ :   18
FvePKS_clo : ATGTTTC-GGAGCCAGCGTTTTGTCCCATTCGTTGAGCGACAACACTCGAGCGGTTCCCATCAGGTTATTCGCGCGCAGCCCCATTGTTGCTGATGGCGCACCGA : 1046
FvePKS_GH7 : ATGTCTC-GGAGCCAGCGTTTTGTCCCATTCGTTGAGCGACAACACTCGAGCGGTTCCCATCAGGTTATTCGCGCGCCGTCCCATTGTTGCTGATGGCGCACCGA :  451
FsePKS_GH7 : ATGTCTCGGGAGCCAGCGTTGTGTCCCATTCGTTGAGCGACGACACTCGAGCGGTTCCCATC------------------------------------------- :  496
                                                                      ccatc

                   1060         *      1080         *      1100         *      1120         *      1140         *
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : AACAAATGCGGCGAGGGATTTGGGGGCGAGTGAAATCTCGCGGCAACGACCGTGTATTCTTTTGTGACAAGCTATCAGTTTACTCTTGCGTGAGATTCTTGGGCC : 1151
FvePKS_GH7 : AACAAATGCGGCGAGGGATTTGGGGGCGAGTGAAATCTCGCGGCAACGACCGTGTATTCTTTTGTGACAAGCTATCAGTTTACTCTTGCGTGAGATTCTTGGGCC :  556
FsePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -

              1160         *      1180         *      1200         *      1220         *      1240         *      1260
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : ACTTTAGAAGCGATTCCCAGTTCCCTTTTTATGGGTCGCATCGCAAGCGTCTTCCCCCCAGCACCGCTTCCTCTTCTTAACGGGTGGTCATTTGCCGACCACTTT : 1256
FvePKS_GH7 : ACTTTAGAAGCGATTCCCAGTTCCCTTTTTATGGGTCGCATCGCAAGCGTCTTCCCCCCAGCACCGCTTCCTCTTCTTAACGGGTGGTCATTTGCCGACCACTTT :  661
FsePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -
```

```
                      *      1280         *      1300         *      1320         *      1340         *      1360
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : TGGGCTTCTCCCCTCTCGAAAAAGAGAGTTGGTGTTCCAAGTTTTGAAGTACGGTTGGCATTTGGTTGATGCGGTAAAGATTATGTTCCTTGCGCCACGTGTGGC : 1361
FvePKS_GH7 : TGGGCTTCTCCCCTCTCGAAAAAGAGAGTTGGTGTTCCAAGTTTTGAAGTACGGTTGGCATTTGGTTGATGCGGTAAAGATTATGTCCCTTGCGCCACGTGTGGC :  766
FsePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -

                 *      1380         *      1400         *      1420         *      1440         *      1460         *
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : AGAACAGGGGAAGCCCAATAGCTTCTATATAACTCCAGTACTGCTGTTCTGTTGCGGTAGCGCGTGCGTGTTTGTCTTGAGGTTGGCGGGTACCTTTGTTTTTGT : 1466
FvePKS_GH7 : AAAACAAGGGA---------------------------------------------------------------------------------------------- :  777
FsePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -

                   1480         *      1500         *      1520         *      1540         *      1560         *
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : CAAAACGTTTTGTTGGTCGTGCTGTATATTGATCGTACGATTGTAACTGTTTGTTGGGTCACAACGGGTGTGGAGGGTCGTCGCGAGTGGTGAGCGTTCACTTTG : 1571
FvePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -
FsePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -

              1580         *      1600         *      1620         *      1640         *      1660         *      1680
FvePKS_FWp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_RVp : --------------------------------------------------------------------------------------------------------- :    -
FvePKS_clo : CTGCGGAGGAGGCAGGAATATGTAGTTGGATTTATTTTCGTTTGGGTGCGGTTTTATCGCCTGCTACCATCGGGACATGTGGATCGTCGTCAATTTTGGCAAAAC : 1676
FvePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -
FsePKS_GH7 : --------------------------------------------------------------------------------------------------------- :    -

                      *      1700         *      1720         *
FvePKS_FWp : -------------------------------------------------- :    -
FvePKS_RVp : -------------------------------------------------- :    -
FvePKS_clo : ACCTCGCTCGATGATAATGAAATATATTTCTCNTAAAAAAAAAAAAAAAA : 1726
FvePKS_GH7 : -------------------------------------------------- :    -
FsePKS_GH7 : -------------------------------------------------- :    -
```

S1 Fig.A: Nucleotide alignment of the brown algal PKS III coding sequences.

Nucleotide alignment of the *Fucus vesiculosus* cDNA sequence with Fucus EST sequences.

qPCR forward primer (FvePKS_FWp), qPCR reverse primer (FvePKS_RVp), partial cDNA sequence cloned from *F. vesiculosus* (FvePKS_clo), *F. vesiculosus* EST of GH706741 GenBank accession (FvePKS_GH7), *F. serratus* EST of GH701018 GenBank accession (FsePKS_GH7). The positions sharing a conservation of 100, 80 and 60% are respectively shaded in black, dark grey and light grey.

```
                   *        20         *        40         *        60         *        80         *       100         *       120
FsePKS  : ---------------------------------------------------------------------------------------------------------------------------- :    -
FvePKS  : ---------------------------------------------------------------------------------------------------------------------------- :    -
SbiPKS  : ATGTCTTCAGCAGCTGTTGCTATGTTGGCGGATCCCACCGTGCAGATCGCCCTGGCTTGCATCGTGCTCTCCCTCATCGTGGTATTCCGGTCGTACCGCAAGGGGAAGGATGAGCAGACCGTCT :  124
EsiPKS1 : ATGTCTTCTGCTGCGGTTGCTATGCTGGCTGACCCGACTGTCCAGATCGCTCTGGCGTGCCTGGTGGTGTCTCTCTTCGTTGTGCTGCAGTCGGTCAAAAAGTCCAAGGACGAGCAGACGGTAT :  124

               *       140         *       160         *       180         *       200         *       220         *       240
FsePKS  : ---------------------------------------------------------------------------------------------------------------------------- :    -
FvePKS  : ---------------------------------------------------------------------------------------------------------------------------- :    -
SbiPKS  : ACCCCGTCATCGCGGGGATGGCGATCGGCAACCCTCAGTACCGGTGCACCCAGGACCAGGCGCTCACGGTCGCTCAGAAGTGCCCTGGCGTGGAGTCTGTGAAGCCAGTGCTCGAGCGAATCTA :  248
EsiPKS1 : ACCCGGTCATCGCCGGGATGGCCATCGGCAACCCGCAGTACCGCTGCACGCAGAACGAGGCCCTCGCCGTCGCCTCCAAGTGCCCGGGCCTCGAGTCCATCAAGCCCGTTCTCGAGCGCATCTA :  248

           *       260         *       280         *       300         *       320         *       340         *       360         *
FsePKS  : ---------------------------------------------------------------------------------------------------------------------------- :    -
FvePKS  : ---------------------------------------------------------------------------------------------------------------------------- :    -
SbiPKS  : CGGAAACTCCCGCATCGGCAGCCGATACTTCGCCGTGCCGGACTTTACTCCCAACCAGGCTGCCAAGGGCGACCCTATGTTCTTCCCCGCCGACGGCAGCTTCGAGGTGCCCGTGGACACCCGC :  372
EsiPKS1 : CGGCAACTCGCGCATCGGCAGCCGCTACTTCGCCGTGCCGGACTTCACCCCCGGCAGGGCGGCCAAGGGCGACCCCCTCTTCTACCCGGCCGACGGCAGCTACCAGGTGCCCGTGGACGTCCGG :  372

               380         *       400         *       420         *       440         *       460         *       480         *
FsePKS  : ---------------------------------------------------------------------------------------------------------------------------- :    -
FvePKS  : ---------------------------------------------------------------------------------------------------------------------------- :    -
SbiPKS  : CTCGACAAGTTCAAGGAGAAGGCGGTTCCCCTCGTTTCCGACGTCGCTCGCCGCGCCATTAAGGAGGCGGGGATCGATGTGTCGGACGTGTCGAAGCTCGTCGTCGTGTCCTCTACCGGTTTCC :  496
EsiPKS1 : CTGGACAAGTTCAAGGAGAAGGCCGTCCCGCTGGTGTCCGACGTCGCCCGCCGCGCCATCAAGGAGGCCGGCCTGAACGTCGAGGACATCTCCAAGCTCGTCGTGGTCTCCTCCACCGGATTCC :  496

           500         *       520         *       540         *       560         *       580         *       600         *       620
FsePKS  : ---------------------------------------------------------------------------------------------------------------------------- :    -
FvePKS  : ---------------ACTGCGAGCTGATCAAGAACCTGGGCCTCACCCGCTCCGTGGACCGTACTCTCATCGGCTTCATGGGGTGCGCCGCGGCCATGAACGGCTTCCGCAACGCGAACGACTT :  109
SbiPKS  : TCGGCCCCGGTCTGGACTGCGAGCTTATCAAGAACCTCGGCCTCACCCGCTCTGTCGACCGCACTCTCATCGGCTTCATGGGATGCGCTGCCGCCATGAACGGCTTCCGTAACGCGAACGACTT :  620
EsiPKS1 : TCGGCCCCGGCCTCGACTGCGAGCTGATCAAGAACCTCGGCCTGACCCGCTCCGTCGACCGCACCCTCATCGGGTTCATGGGCTGCGCCGCCGCCATGAACGGTTTCCGTAACGCGAACGACTA :  620
                         actgcgagct atcaagaacct ggcct acccgctc gt gaccg ac ctcatcgg ttcatggg tgcgc gc gccatgaacgg ttccg aacgcgaacgact

                   *       640         *       660         *       680         *       700         *       720         *       740
FsePKS  : ---------------------------------------------------------------------------------------------------------------------------- :    -
FvePKS  : CGTGACTGCCAACCCCGGCAAGTACGCCCTGATGATCTGCGTCGAGCTTTCCTCGGTGCACACGACCTTCGACGACAACATCAACGACGCCATCCTCCACGCAATCTTCGCCGATGGGTGCGCC :  233
SbiPKS  : CGTTACCGCAAACCCTGGCAAGTACGCCCTCATGATCTGCGTGGAGCTGTCCTCTGTGCACACCACCTTCGATGACAACATCAACGACGCCATCCTCCACGCCATCTTCGCCGACGGGTGCGCC :  744
EsiPKS1 : CGTCACCGCCAACCCCGGAAAGTACGCGCTGATGATCTGCGTCGAGCTTTCCTCGGTGCACACGACCTTTGACGACAACATCAACGACGCGATCTTGCACGCTATCTTCGCCGACGGATGCGCC :  744
          cgt ac gc aaccc gg aagtacgc ct atgatctgcgt gagct tcctc gtgcacac acctt ga gacaacatcaacgacgc atc t cacgc atcttcgccga gg tgcgcc
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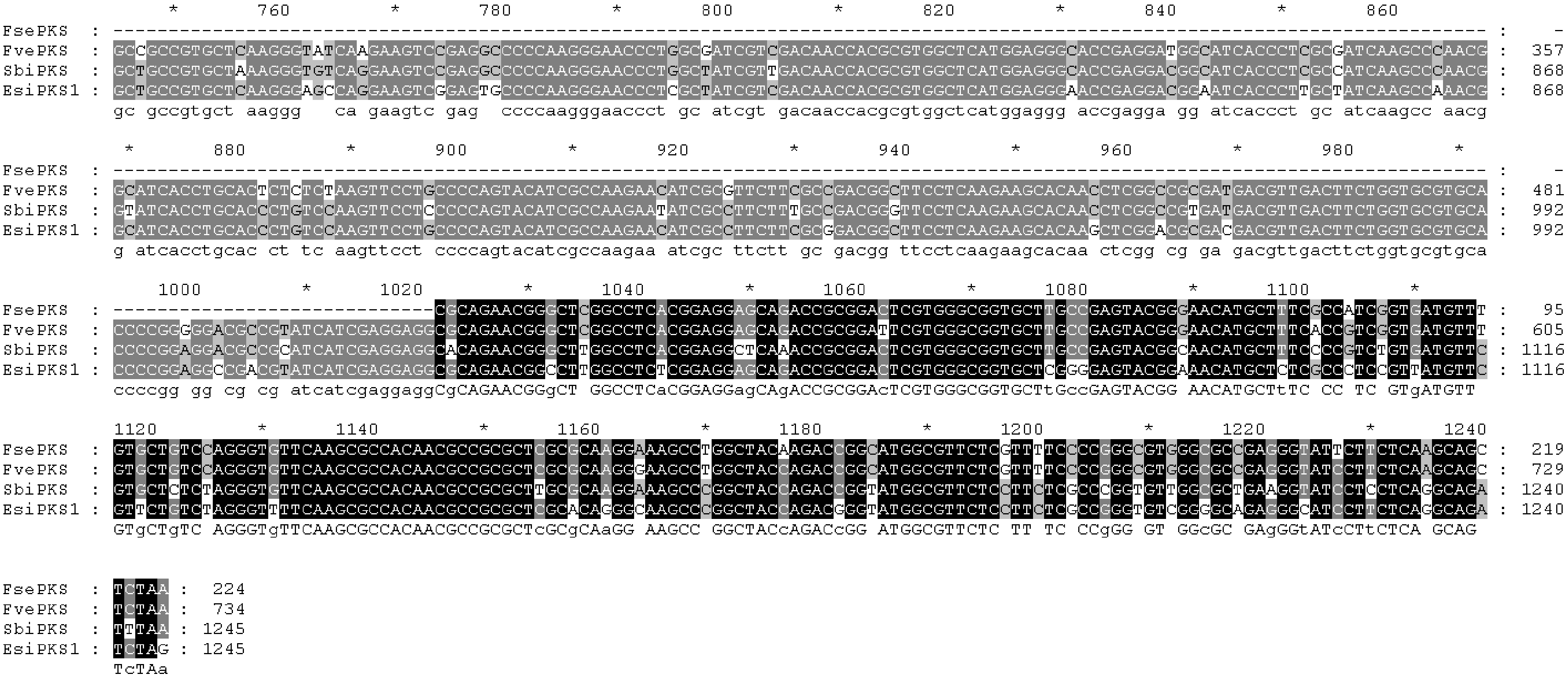

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                  *       760         *       780         *       800         *       820         *       840         *       860
FsePKS  : ---------------------------------------------------------------------------------------------------------------------------- :    -
FvePKS  : GCCGCCGTGCTCAAGGGTATCAAGAAGTCCGAGGCCCCCAAGGGAACCCTGGCGATCGTCGACAACCACGCGTGGCTCATGGAGGGCACCGAGGATGGCATCACCCTCGCGATCAAGCCCAACG :  357
SbiPKS  : GCTGCCGTGCTAAAGGGTGTCAGGAAGTCCGAGGCCCCCAAGGGAACCCTGGCTATCGTTGACAACCACGCGTGGCTCATGGAGGGCACCGAGGACGGCATCACCCTCGCCATCAAGCCCAACG :  868
EsiPKS1 : GCTGCCGTGCTCAAGGGAGCCAGGAAGTCGGAGTGCCCCAAGGGAACCCTCGCTATCGTCGACAACCACGCGTGGCTCATGGAGGGAACCGAGGACGGAATCACCCTTGCTATCAAGCCAAACG :  868
          gc gccgtgct aaggg   ca gaagtc gag  ccccaagggaaccct gc atcgt gacaaccacgcgtggctcatggaggg accgagga gg atcaccct gc atcaagcc aacg

            *       880         *       900         *       920         *       940         *       960         *       980         *
FsePKS  : ---------------------------------------------------------------------------------------------------------------------------- :    -
FvePKS  : GCATCACCTGCACTCTCTCTAAGTTCCTGCCCCAGTACATCGCCAAGAACATCGCGTTCTTCGCCGACGGCTTCCTCAAGAAGCACAACCTCGGCCGCGATGACGTTGACTTCTGGTGCGTGCA :  481
SbiPKS  : GTATCACCTGCACCCTGTCCAAGTTCCTCCCCCAGTACATCGCCAAGAATATCGCCTTCTTTGCCGACGGGTTCCTCAAGAAGCACAACCTCGGCCGTGATGACGTTGACTTCTGGTGCGTGCA :  992
EsiPKS1 : GCATCACCTGCACCCTGTCCAAGTTCCTGCCCCAGTACATCGCCAAGAACATCGCCTTCTTCGCGGACGGCTTCCTCAAGAAGCACAAGCTCGGACGCGACGACGTTGACTTCTGGTGCGTGCA :  992
          g atcacctgcac ct tc aagttcct ccccagtacatcgccaagaa atcgc ttctt gc gacgg ttcctcaagaagcacaa ctcgg cg ga gacgttgacttctggtgcgtgca

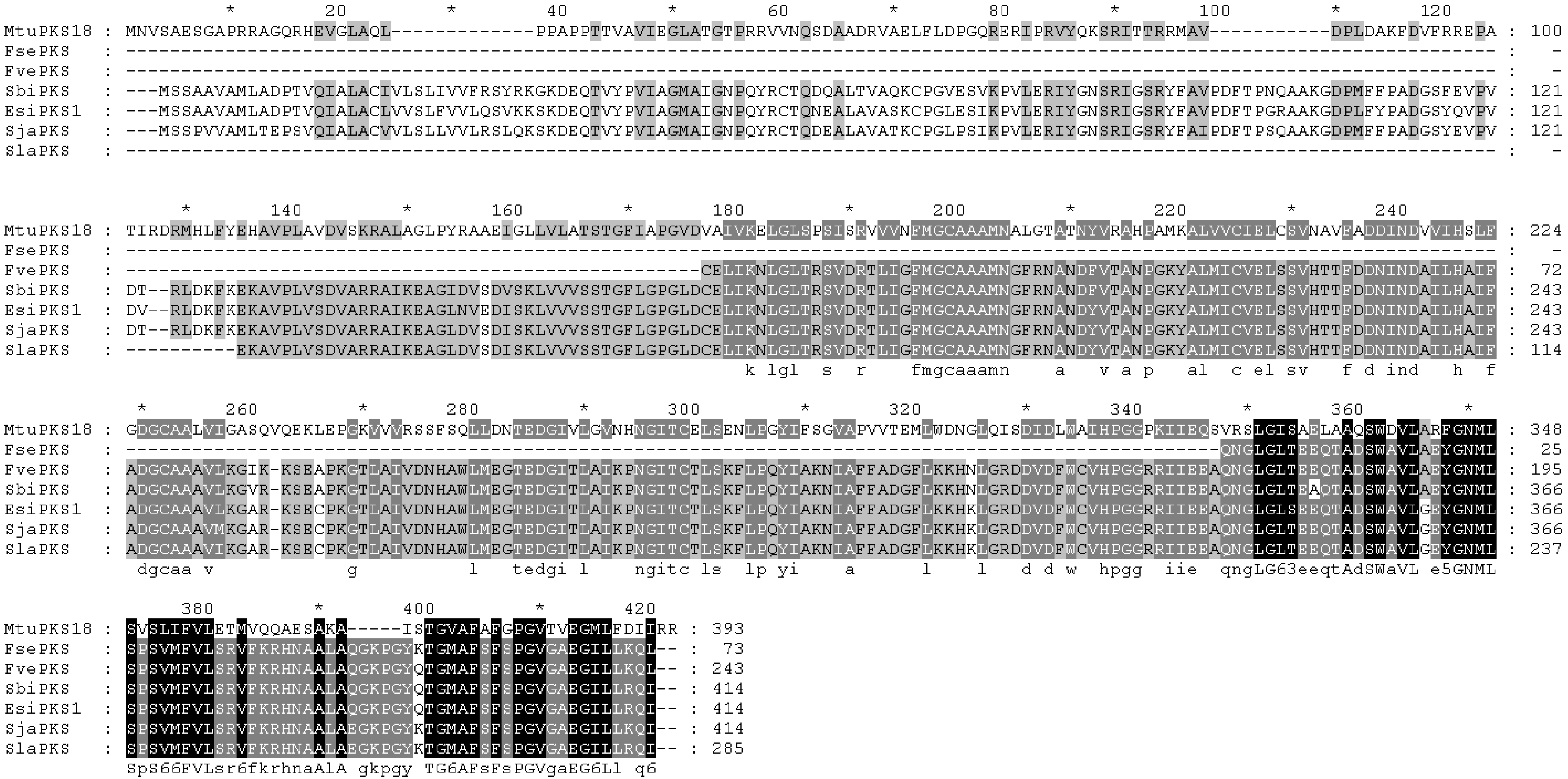
               1000         *      1020         *      1040         *      1060         *      1080         *      1100         *
FsePKS  : -----------------------------CGCAGAACGGGCTCGGCCTCACGGAGGAGCAGACCGCGGACTCGTGGGCGGTGCTTGCCGAGTACGGGAACATGCTTTCGCCATCGGTGATGTTT :   95
FvePKS  : CCCCGGGGGACGCCGTATCATCGAGGAGGCGCAGAACGGGCTCGGCCTCACGGAGGAGCAGACCGCGGATTCGTGGGCGGTGCTTGCCGAGTACGGGAACATGCTTTCACCGTCGGTGATGTTT :  605
SbiPKS  : CCCCGGAGGACGCCGCATCATCGAGGAGGCACAGAACGGGCTTGGCCTCACGGAGGCTCAAACCGCGGACTCGTGGGCGGTGCTTGCCGAGTACGGCAACATGCTTTCCCCGTCTGTGATGTTC : 1116
EsiPKS1 : CCCCGGAGGCCGACGTATCATCGAGGAGGCGCAGAACGGCCTTGGCCTCTCGGAGGAGCAGACCGCGGACTCGTGGGCGGTGCTCGGGGAGTACGGAAACATGCTCTCGCCCTCCGTTATGTTC : 1116
          ccccgg gg cg cg atcatcgaggaggCgCAGAACGGgCT GGCCTCaCGGAGGagCAgACCGCGGAcTCGTGGGCGGTGCTtGccGAGTACGG AACATGCTtTC CC TC GTgATGTT

          1120         *      1140         *      1160         *      1180         *      1200         *      1220         *      1240
FsePKS  : GTGCTGTCCAGGGTGTTCAAGCGCCACAACGCCGCGCTCGCGCAAGGAAAGCCTGGCTACAAGACCGGCATGGCGTTCTCGTTTTCCCCGGGCGTGGGCGCCGAGGGTATTCTTCTCAAGCAGC :  219
FvePKS  : GTGCTGTCCAGGGTGTTCAAGCGCCACAACGCCGCGCTCGCGCAAGGGAAGCCTGGCTACCAGACCGGCATGGCGTTCTCGTTTTCCCCGGGCGTGGGCGCCGAGGGTATCCTTCTCAAGCAGC :  729
SbiPKS  : GTGCTCTCTAGGGTGTTCAAGCGCCACAACGCCGCGCTTGCGCAAGGAAAGCCCGGCTACCAGACCGGTATGGCGTTCTCCTTCTCGCCCGGTGTTGGCGCTGAAGGTATCCTCCTCAGGCAGA : 1240
EsiPKS1 : GTTCTGTCTAGGGTTTTCAAGCGCCACAACGCCGCGCTCGCACAGGGCAAGCCCGGCTACCAGACGGGTATGGCGTTCTCCTTCTCGCCGGGTGTCGGGGCAGAGGGCATCCTTCTCAGGCAGA : 1240
          GTgCTgTC AGGGTgTTCAAGCGCCACAACGCCGCGCTcGCgCAaGG AAGCC GGCTACcAGACcGG ATGGCGTTCTC TT TC CCgGG GT GGcGC GAgGGtATcCTtCTCA GCAG


FsePKS  : TCTAA :  224
FvePKS  : TCTAA :  734
SbiPKS  : TTTAA : 1245
EsiPKS1 : TCTAG : 1245
          TcTAa
```

S1 Fig. B: Nucleotide alignment of the brown algal PKS III coding sequences.

Fucus serratus GH701018 (FsePKS), partial cDNA sequence cloned from *Fucus vesiculosus* (FvePKS), *Sargassum binderi* HM245964 (SbiPKS), *Ectocarpus siliculosus* Esi0024_0032 ORCAE Id (EsiPKS1). The positions sharing a conservation of 100, 75 and 50% are respectively shaded in black, dark grey and light grey.



```
                    *        20         *        40         *        60         *        80         *       100         *       120
MtuPKS18 : MNVSAESGAPRRAGQRHEVGLAQL-------------PPAPPTTVAVIEGLATGTPRRVVNQSDAADRVAELFLDPGQRERIPRVYQKSRITTRRMAV-----------DPLDAKFDVFRREPA : 100
FsePKS   : ---------------------------------------------------------------------------------------------------------------------------- :   -
FvePKS   : ---------------------------------------------------------------------------------------------------------------------------- :   -
SbiPKS   : ---MSSAAVAMLADPTVQIALACIVLSLIVVFRSYRKGKDEQTVYPVIAGMAIGNPQYRCTQDQALTVAQKCPGVESVKPVLERIYGNSRIGSRYFAVPDFTPNQAAKGDPMFFPADGSFEVPV : 121
EsiPKS1  : ---MSSAAVAMLADPTVQIALACLVVSLFVVLQSVKKSKDEQTVYPVIAGMAIGNPQYRCTQNEALAVASKCPGLESIKPVLERIYGNSRIGSRYFAVPDFTPGRAAKGDPLFYPADGSYQVPV : 121
SjaPKS   : ---MSSPVVAMLTEPSVQIALACVVLSLLVVLRSLQKSKDEQTVYPVIAGMAIGNPQYRCTQDEALAVATKCPGLPSIKPVLERIYGNSRIGSRYFAIPDFTPSQAAKGDPMFFPADGSYEVPV : 121
SlaPKS   : ---------------------------------------------------------------------------------------------------------------------------- :   -

                *       140         *       160         *       180         *       200         *       220         *       240
MtuPKS18 : TIRDRMHLFYEHAVPLAVDVSKRALAGLPYRAAEIGLLVLATSTGFIAPGVDVAIVKELGLSPSISRVVVNFMGCAAAMNALGTATNYVRAHPAMKALVVCIELCSVNAVFADDINDVVIHSLF : 224
FsePKS   : ---------------------------------------------------------------------------------------------------------------------------- :   -
FvePKS   : ----------------------------------------------------CELIKNLGLTRSVDRTLIGFMGCAAAMNGFRNANDFVTANPGKYALMICVELSSVHTTFDDNINDAILHAIF :  72
SbiPKS   : DT--RLDKFKEKAVPLVSDVARRAIKEAGIDVSDVSKLVVVSSTGFLGPGLDCELIKNLGLTRSVDRTLIGFMGCAAAMNGFRNANDFVTANPGKYALMICVELSSVHTTFDDNINDAILHAIF : 243
EsiPKS1  : DV--RLDKFKEKAVPLVSDVARRAIKEAGLNVEDISKLVVVSSTGFLGPGLDCELIKNLGLTRSVDRTLIGFMGCAAAMNGFRNANDYVTANPGKYALMICVELSSVHTTFDDNINDAILHAIF : 243
SjaPKS   : DT--RLDKFKEKAVPLVSDVARRAIKEAGLDVSDISKLVVVSSTGFLGPGLDCELIKNLGLTRSVDRTLIGFMGCAAAMNGFRNANDYVTANPGKYALMICVELSSVHTTFDDNINDAILHAIF : 243
SlaPKS   : ----------EKAVPLVSDVARRAIKEAGLDVSDISKLVVVSSTGFLGPGLDCELIKNLGLTRSVDRTLIGFMGCAAAMNGFRNANDYVTANPGKYALMICVELSSVHTTFDDNINDAILHAIF : 114
                                                                   k lgl  s  r    fmgcaaamn    a   v a p   al  c el sv   f d ind   h  f

            *       260         *       280         *       300         *       320         *       340         *       360         *
MtuPKS18 : GDGCAALVIGASQVQEKLEPGKVVVRSSFSQLLDNTEDGIVLGVNHNGITCELSENLPGYIFSGVAPVVTEMLWDNGLQISDIDLWAIHPGGPKIIEQSVRSLGISAELAAQSWDVLARFGNML : 348
FsePKS   : ---------------------------------------------------------------------------------------------------QNGLGLTEEQTADSWAVLAEYGNML :  25
FvePKS   : ADGCAAAVLKGIK-KSEAPKGTLAIVDNHAWLMEGTEDGITLAIKPNGITCTLSKFLPQYIAKNIAFFADGFLKKHNLGRDDVDFWCVHPGGRRIIEEAQNGLGLTEEQTADSWAVLAEYGNML : 195
SbiPKS   : ADGCAAAVLKGVR-KSEAPKGTLAIVDNHAWLMEGTEDGITLAIKPNGITCTLSKFLPQYIAKNIAFFADGFLKKHNLGRDDVDFWCVHPGGRRIIEEAQNGLGLTEAQTADSWAVLAEYGNML : 366
EsiPKS1  : ADGCAAAVLKGAR-KSECPKGTLAIVDNHAWLMEGTEDGITLAIKPNGITCTLSKFLPQYIAKNIAFFADGFLKKHKLGRDDVDFWCVHPGGRRIIEEAQNGLGLSEEQTADSWAVLGEYGNML : 366
SjaPKS   : ADGCAAAVMKGAR-KSECPKGTLAIVDNHAWLMEGTEDGITLAIKPNGITCTLSKFLPQYIAKNIAFFADGFLKKHKLGRDDVDFWCVHPGGRRIIEEAQNGLGLTEEQTADSWAVLGEYGNML : 366
SlaPKS   : ADGCAAAVIKGAR-KSECPKGTLAIVDNHAWLMEGTEDGITLAIKPNGITCTLSKFLPQYIAKNIAFFADGFLKKHKLGRDDVDFWCVHPGGRRIIEEAQNGLGLTEEQTADSWAVLGEYGNML : 237
            dgcaa v            g          l   tedgi l    ngitc ls  lp yi    a      l    l   d d w  hpgg  iie  qngLG63eeqtAdSWaVL e5GNML

                380         *       400         *       420
MtuPKS18 : SVSLIFVLETMVQQAESAKA-----ISTGVAFAFGPGVTVEGMLFDIIRR : 393
FsePKS   : SPSVMFVLSRVFKRHNAALAQGKPGYKTGMAFSFSPGVGAEGILLKQL-- :  73
FvePKS   : SPSVMFVLSRVFKRHNAALAQGKPGYQTGMAFSFSPGVGAEGILLKQL-- : 243
SbiPKS   : SPSVMFVLSRVFKRHNAALAQGKPGYQTGMAFSFSPGVGAEGILLRQI-- : 414
EsiPKS1  : SPSVMFVLSRVFKRHNAALAQGKPGYQTGMAFSFSPGVGAEGILLRQI-- : 414
SjaPKS   : SPSVMFVLSRVFKRHNAALAEGKPGYKTGMAFSFSPGVGAEGILLKQI-- : 414
SlaPKS   : SPSVMFVLSRVFKRHNAALAEGKPGYKTGMAFSFSPGVGAEGILLRQI-- : 285
           SpS66FVLsr6fkrhnaAlA gkpgy TG6AFsFsPGVgaEG6Ll q6
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S1 Fig.C: Protein sequence alignment of the brown algal PKS III with a bacterial counterpart.

Mycobacterium tuberculosis P9WPF0 (MtuPKS18), translated sequence of *Fucus serratus* GH701018 (FsePKS), translated sequence of *Fucus vesiculosus* (FvePKS), *Sargassum binderi* ADK13089 (SbiPKS), *Ectocarpus siliculosus* Esi0024_0032 (EsiPKS1), translated sequence of *Saccharina japonica* contig_6991 (SjaPKS), translated sequence of *Saccharina latissima* contig_4304 (SjaPKS). The residues sharing 100, 80 and 60% identity are respectively shaded in black, dark grey and light grey.