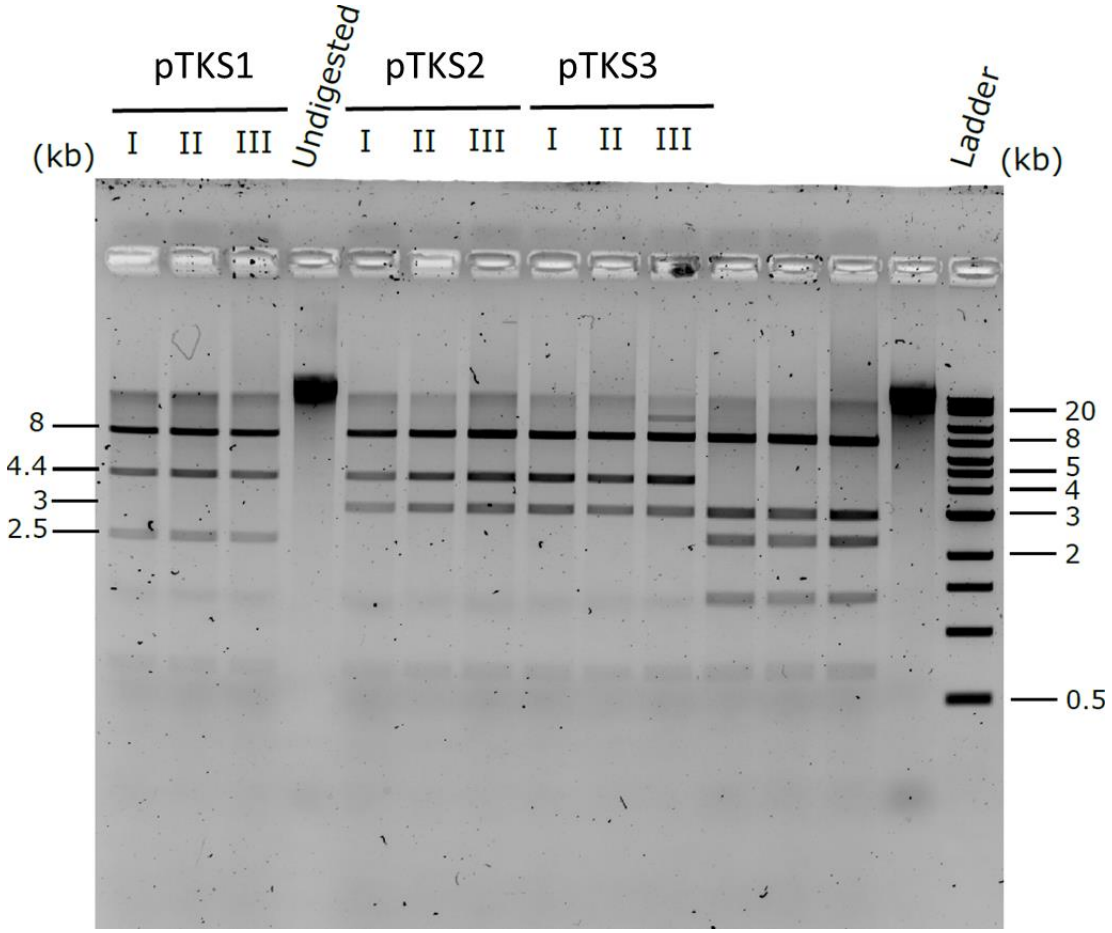
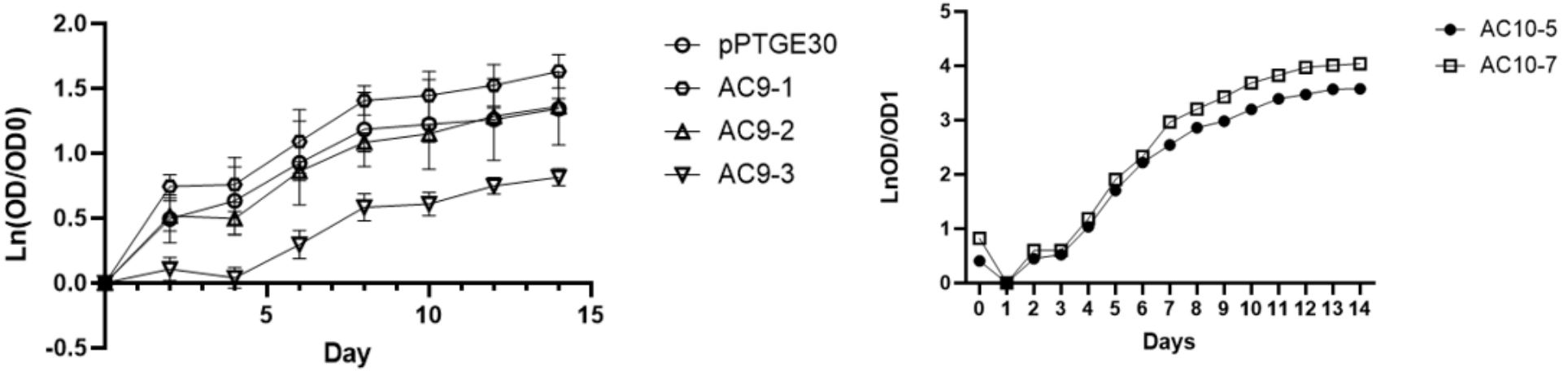
Supplementary Information

Impact of heterologous expression of *Cannabis sativa* tetraketide synthase on *Phaeodactylum tricornutum* metabolic profile

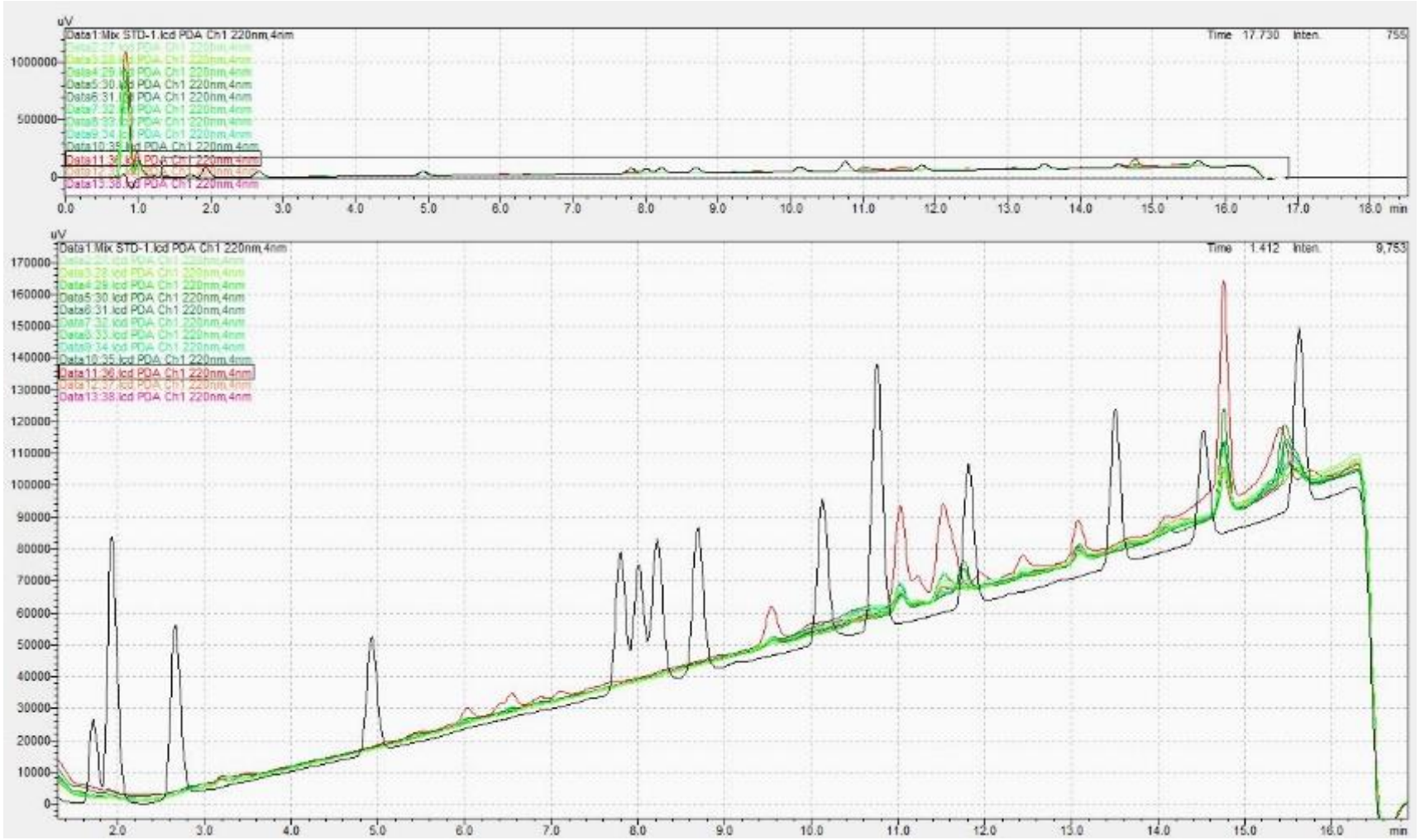


Supplementary Figure 1: *P. tricornutum* DNA plasmid digestion profiles. Agarose gel electrophoresis profile *Bam*HI-HF digestion recombinant plasmid DNA extracted from *E. coli* after plasmid rescue from *P. tricornutum* transconjugants.

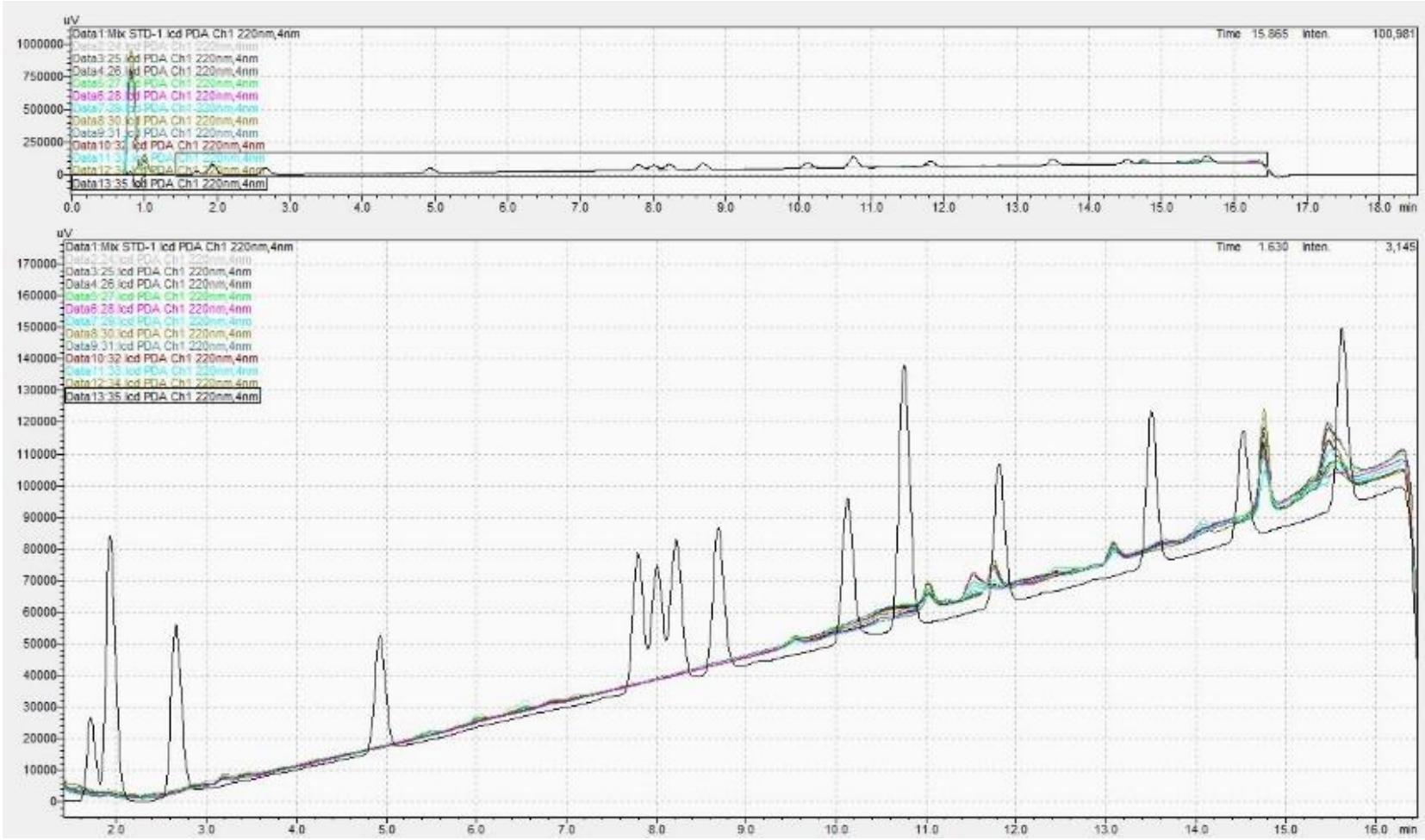


Supplementary Figure 2: *Cs*TKS and empty vector clones have a similar growth kinetic. Optic density of each culture was taken at 730 nm and a t-test was performed for statistical analysis.

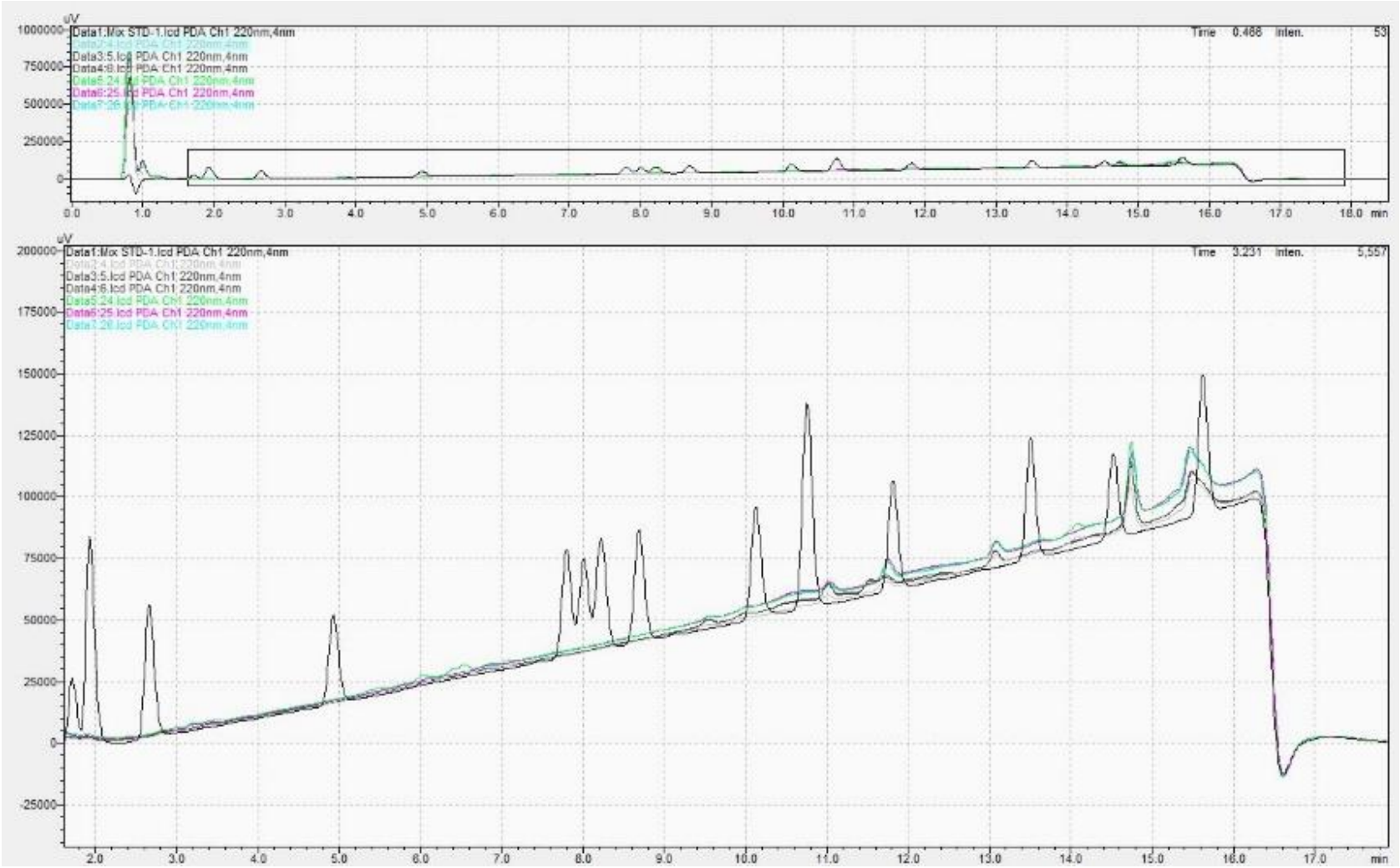
a)


uV
Data1:Mix STD-1.lcd PDA Ch1 220nm,4nm
Time 17.730 Inten. 755
1000000
500000
0
0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 min
uV
Data1:Mix STD-1.lcd PDA Ch1 220nm,4nm
Time 1.412 Inten. 9,753
Data5:30.lcd PDA Ch1 220nm,4nm
Data6:31.lcd PDA Ch1 220nm,4nm
Data11:36.lcd PDA Ch1 220nm,4nm
Data13:38.lcd PDA Ch1 220nm,4nm
170000
160000
150000
140000
130000
120000
110000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 min

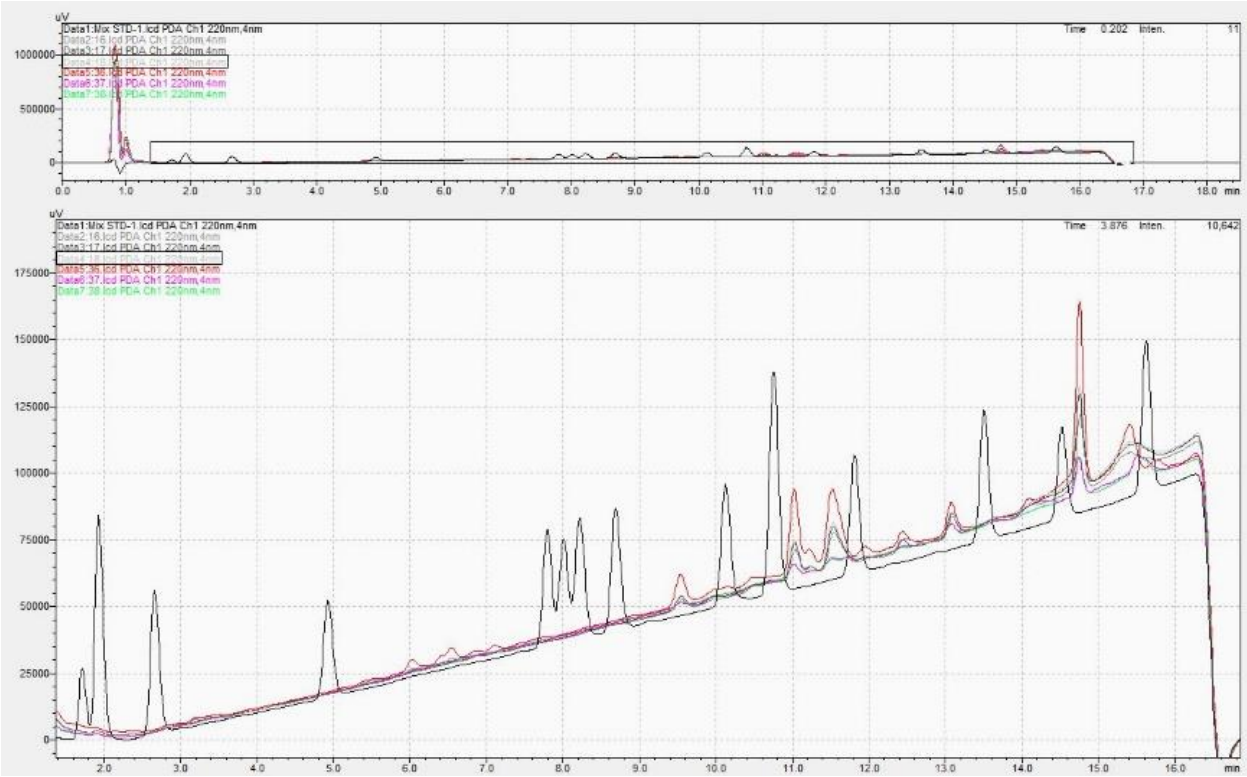
b)


uV
Data1:Mix STD-1.lcd PDA Ch1 220nm,4nm
Time 15.865 inten. 100,981
Data3:25.lcd PDA Ch1 220nm,4nm
Data4:26.lcd PDA Ch1 220nm,4nm
Data6:28.lcd PDA Ch1 220nm,4nm
Data8:30.lcd PDA Ch1 220nm,4nm
Data9:31.lcd PDA Ch1 220nm,4nm
Data10:32.lcd PDA Ch1 220nm,4nm
Data13:35.lcd PDA Ch1 220nm,4nm
1000000
750000
500000
250000
0
0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 min
uV
Data1:Mix STD-1.lcd PDA Ch1 220nm,4nm
Time 1.630 inten. 3,145
Data3:25.lcd PDA Ch1 220nm,4nm
Data4:26.lcd PDA Ch1 220nm,4nm
Data6:28.lcd PDA Ch1 220nm,4nm
Data8:30.lcd PDA Ch1 220nm,4nm
Data9:31.lcd PDA Ch1 220nm,4nm
Data10:32.lcd PDA Ch1 220nm,4nm
Data13:35.lcd PDA Ch1 220nm,4nm
170000
160000
150000
140000
130000
120000
110000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 min

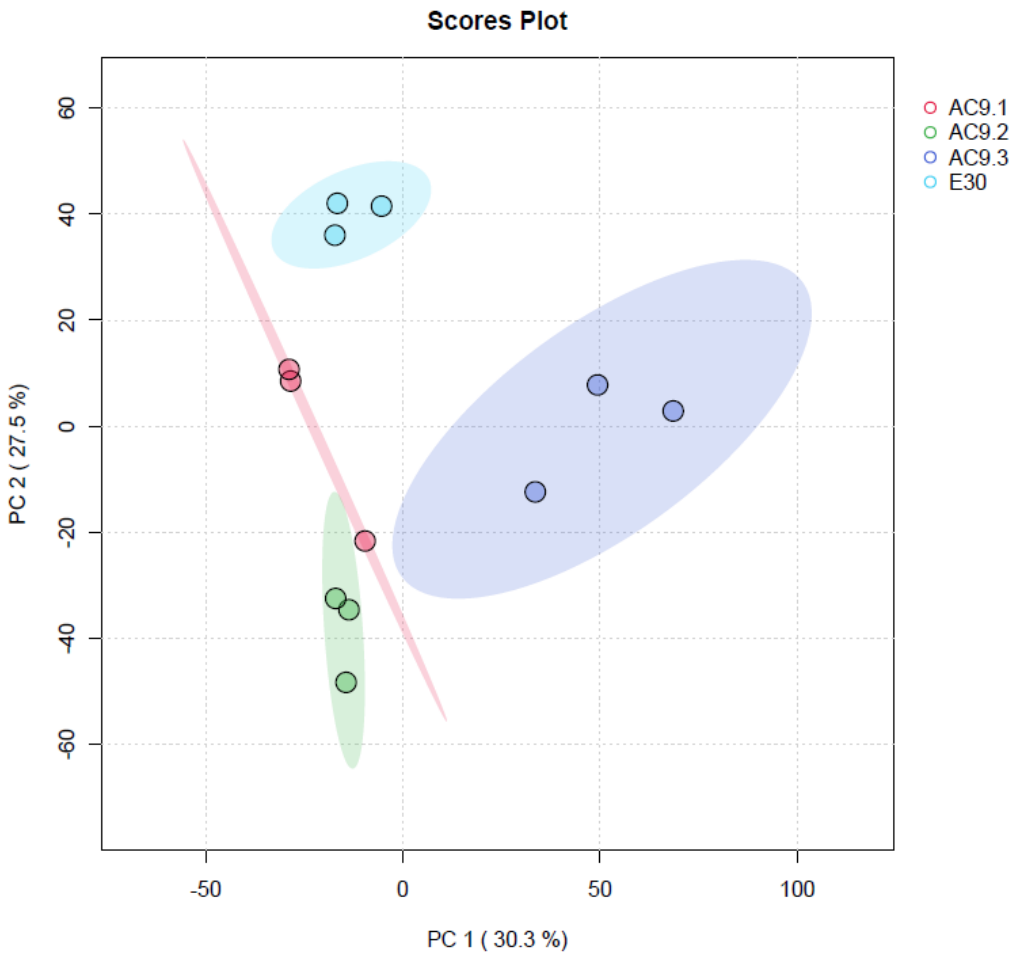
c)


uV
Data1:Mix STD-1.lcd PDA Ch1 220nm,4nm
Data3:5.lcd PDA Ch1 220nm,4nm
Data4:6.lcd PDA Ch1 220nm,4nm
Data6:25.lcd PDA Ch1 220nm,4nm
Time 0.488 Inten. 53
1000000
750000
500000
250000
0
0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 min
uV
Data1:Mix STD-1.lcd PDA Ch1 220nm,4nm
Data3:5.lcd PDA Ch1 220nm,4nm
Data4:6.lcd PDA Ch1 220nm,4nm
Data5:24.lcd PDA Ch1 220nm,4nm
Data5:25.lcd PDA Ch1 220nm,4nm
Time 3.231 Inten. 5,557
200000
175000
150000
125000
100000
75000
50000
25000
0
-25000
2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 min

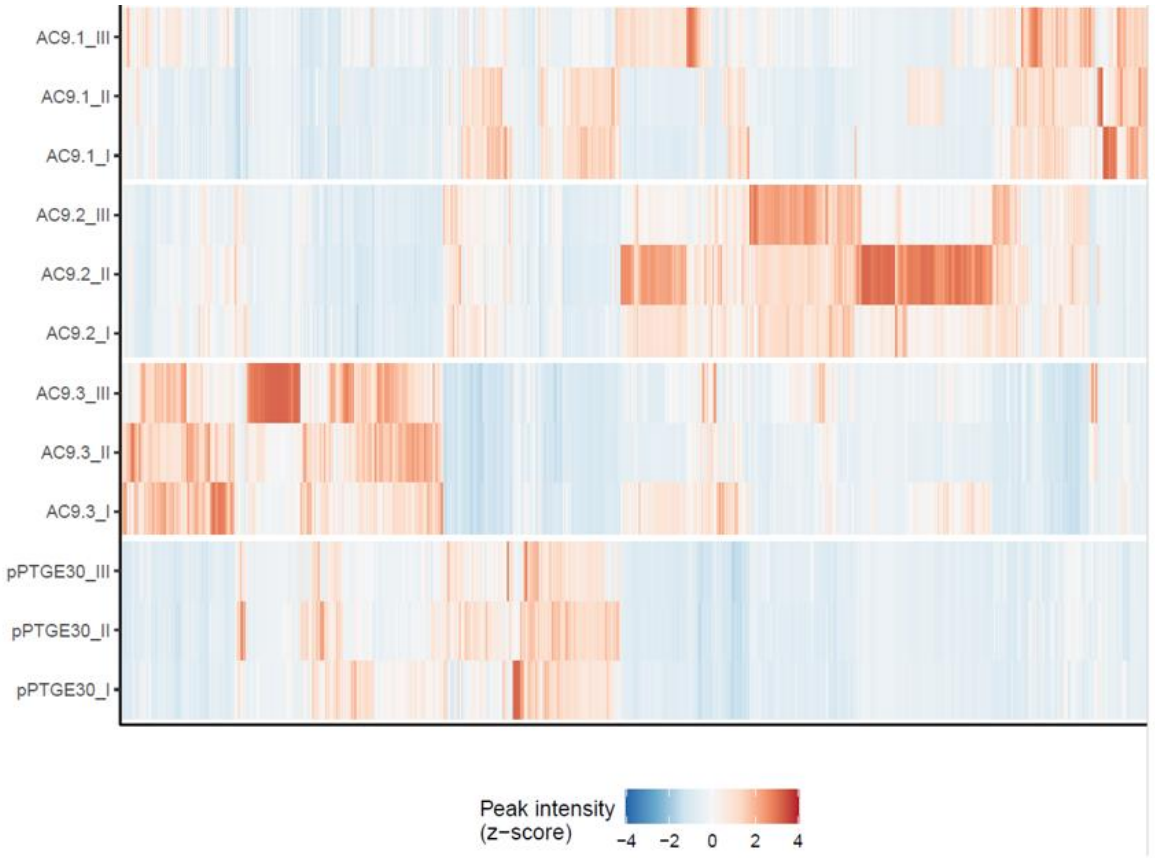
d)



Supplementary Figure 3: HPLC chromatogram of *Cs*TKS and *Cs*OAC enzymatic assays. The black line corresponds to the run with cannabinoid standards. **a**: Chromatogram of enzymatic assay from crude extract of AC9.1, AC9.4, AC10.5 (*Cs*OAC) and the Combined (*Cs*TKS + *Cs*OAC) culture made of all three clones mixed, all supplemented with hexanoyl-CoA and malonyl-CoA. Each clone has previously been tested for protein production by western blot. The two peaks visible between 11 mins and 12 mins do not correspond to any cannabinoid standard's UV profile. **b**: Chromatogram of pTKS.1, pTKS.4, pOAC.5 and EV enzymatic assays All clones follow the same profile. **c**: Chromatogram of pPtGE30 with and without substrate. **d**: Chromatogram of Combined clones with and without substrate.



Supplementary Figure 4: AC9.3 has a more distant metabolite profile than the 3 other clones**:** Principal component analysis of every clone's metabolite profile by combining HILIC, Reverse phase positive and negative mode.



Supplementary Figure 5: All triplicates of each clone follow a similar profile. Heatmap of unannotated metabolite relative abundance in each clone compared to the mean in all samples.

Supplementary Table 1: All DNA sequences used in this study.

Identity	Sequence
pPtGE30	ACTAAGGGTACTGTTGACATTGCGAAGAGCGACAAAGATTTTGTTATCGGCTTTATTGCTCAAAGAGACATGGGTGGAAGAGATGAAGGTTACGATTGGTTGATTATGACACCCGGTGTGGGTTTAGATGACAAGGGAGACGCAT TGGGTCAACAGTATAGAACCGTGGATGATGTGGTCTCTACAGGATCTGACATTATTATTGTTGGAAGAGGACTATTTGCAAAGGGAAGGGATGCTAAGGTAGAGGGTGAACGTTACAGAAAAGCAGGCTGGGAAGCATATTTGAG AAGATGCGGCCAGCAAAACTAAAAAACTGTATTATAAGTAAATGCATGTATACTAAACTCACAAATTAGAGCTTCAATTTAATTATATCAGTTATTACCCGGCCGGGAATCTCGGTCGTAATGATTTTTATAATGACGAAAAAAAAAAA AATTGGAAAGAAAACCCCCCCCCCCCCCCGCAGCGTTGGGTCCTGGCCACGGGTGCGCATGATCGTGCTCCTGTCGTTGAGGACCCGGCTAGGCTGGCGGGGTTGCCTTACTGGTTAGCAGAATGAATCACCGATACGCGAGCGA ACGTGAAGCGACTGCTGCTGCAAAACGTCTGCGACCTGAGCAACAACATGAATGGTCTTCGGTTTCCGTGTTTCGTAAAGTCTGGAAACGCGGAAGTCAGCGCCCTGCACCATTATGTTCCGGATCTGCATCGCAGGATGCTGCTG GCTACCCTGTGGAACACCTACATCTGTATTAACGAAGCGCTGGCATTGACCCTGAGTGATTTTTCTCTGGTCCCGCCGCATCCATACCGCCAGTTGTTTACCCTCACAACGTTCCAGTAACCGGGCATGTTCATCATCAGTAACCCGTA 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GTTAACCGGGCTGCATCCGATGCAAGTGTGTCGCTGTCGACGAGCTCGCGAGCTCGGACATGAGGTTGCCCCGTATTCAGTGTCGCTGATTTGTATTGTCTGAAGTTGTTTTTACGTTAAGTTGATGCAGATCAATTAATACGATACC TGCGTCATAATTGATTATTTGACGTGGTTTGATGGCCTCCACGCACGTTGTGATATGTAGATGATAATCATTATCACTTTACGGGTCCTTTCCGGTGATCCGACAGGTTACGGGGCGGCGACCTCGCGGGTTTTCGCTATTTATGAAAA TTTTCCGGTTTAAGGCGTTTCCGTTCTTCTTCGTCATAACTTAATGTTTTTATTTAAAATACCCTCTGAAAAGAAAGGAAACGACAGGTGCTGAAAGCGAGCTTTTTGGCCTCTGTCGTTTCCTTTCTCTGTTTTTGTCCGTGGAATGA ACAATGGAAGTCCGAGCTCATCGCTAATAACTTCGTATAGCATACATTATACGAAGTTATATTCGATGCGGCCGCAAGGGGTTCGCGTCAGCGGGTGTTGGCGGGTGTCGGGGCTGGCTTAACTATGCGGCATCAGAGCAGATTGTA CTGAGAGTGCACCATATGCGGTGTGAAATACCACACAGATGCGTAAGGAGAAAATACCGCATCAGGCGCCATTCGCCATTCAGCTGCGCAACTGTTGGGAAGGGCGATCGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAA AGGGGGATGTGCTGCAAGGCGATTAAGTTGGGTAACGCCAGGGTTTTCCCAGTCACGACGTTGTAAAACGACGGCCAGTGAATTGTAATACGACTCACTATAGGGCGAATTCGAGCTCGGTACCCGGGGATCCTCTAGAGTCGAC

	CTGCAGGCATGCAAGCTTGAGTATTCTATAGTCTCACCTAAATAGCTTGGCGTAATCATGGTCATAGCTGTTTCCTGTGTGAAATTGTTATCCGCTCACAATTCCACACAACATACGAGCCGGAAGCATAAAGTGTAAAGCCTGGGGT GCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGCGAACCCCTTGCGGCCGCCCGGGCCGTCGACCAATTCTCATGTTTG ACAGCTTATCATCGAATTTCTGCCATTCATCCGCTTATTATCACTTATTCAGGCGTAGCAACCAGGCGTTTAAGGGCACCAATAACTGCCTTAAAAAAATTACGCCCCGCCCTGCCACTCATCGCAGTACTGTTGTAATTCATTAAGCAT TCTGCCGACATGGAAGCCATCACAAACGGCATGATGAACCTGAATCGCCAGCGGCATCAGCACCTTGTCGCCTTGCGTATAATATTTGCCCATGGTGAAAACGGGGGCGAAGAAGTTGTCCATATTGGCCACGTTTAAATCAAAAC TGGTGAAACTCACCCAGGGATTGGCTGAGACGAAAAACATATTCTCAATAAACCCTTTAGGGAAATAGGCCAGGTTTTCACCGTAACACGCCACATCTTGCGAATATATGTGTAGAAACTGCCGGAAATCGTCGTGGTattcactccaga gcgatgaaaacgtttcagtttgctcatggaaaacggtgtaACAAGGGTGAACACTATCCCATATCACCAGCTCACCGTCTTTCATTGCCATACGAAATTCCGGATGAGCATTCATCAGGCGGGCAAGAATGTGAATAAAGGCCGGATAAAACTTGT GCTTATTTTTCTTTACGGTCTTTAAAAAGGCCGTAATATCCAGCTGAACGGTCTGGTTATAGGTACATTGAGCAACTGACTGAAATGCCTCAAAATGTTCTTTACGATGCCATTGGGATATATCAACGGTGGTATATCCAGTGATTTTTT TCTCCATTTTAGCTTCCTTAGCTCCTGAAAATCTCGATAACTCAAAAAATACGCCCGGTAGTGATCTTATTTCATTATGGTGAAAGTTGGAACCTCTTACGTGCCGATCAACGTCTCATTTTCGCCAAAAGTTGGCCCAGGGCTTCCCG GTATCAACAGGGACACCAGGATTTATTTATTCTGCGAAGTGATCTTCCGTCACAGGTATTTATTCGCGATAAGCTCATGGAGCGGCGTAACCGTCGCACAGGAAGGACAGAGAAAGCGCGGATCTGGGAAGTGACGGACAGAAC GGTCAGGACCTGGATTGGGGAGGCGGTTGCCGCCGCTGCTGCTGACGGTGTGACGTTCTCTGTTCCGGTCACACCACATACGTTCCGCCATTCCTATGCGATGCACATGCTGTATGCCGGTATACCGCTGAAAGTTCTGCAAAGCC TGATGGGACATAAGTCCATCAGTTCAACGGAAGTCTACACGAAGGTTTTTGCGCTGGATGTGGCTGCCCGGCACCGGGTGCAGTTTGCGATGCCGGAGTCTGATGCGGTTGCGATGCTGAAACAATTATCCTGAGAATAAATGCCT TGGCCTTTATATGGAAATGTGGAACTGAGTGGATATGCTGTTTTTGTCTGTTAAACAGAGAAGCTGGCTGTTATCCACTGAGAAGCGAACGAAACAGTCGGGAAAATCTCCCATTATCGTAGAGATCCGCATTATTAATCTCAGGAG CCTGTGTAGCGTTTATAGGAAGTAGTGTTCTGTCATGATGCCTGCAAGCGGTAACGAAAACGATTTGAATATGCCTTCAGGAACAATAGAAATCTTCGTGCGGTGTTACGTTGAAGTGGAGCGGATTATGTCAGCAATGGACAGAA CAACCTAATGAACACAGAACCATGATGTGGTCTGTCCTTTTACAGCCAGTAGTGCTCGCCGCAGTCGAGCGACAGGGCGAAGCCCATCGATACTAGCTTGATTGGGATATCTCGCTCGTGCTTGTCGCGTGCTATGTCTTTTTAGGG TACTTTGAACCTACGTTCGTACTTGTGTAATATGATCATCGTCGTCATCGTATTATCGTTTTTCATCCGTCCAGCGCAAAATGCATTAGCAGCTAGTCCTAGCGTGCGGAGCTACCTGTACAGGTGCATGACGGATGCGTGTCCTTAAGT GAGTTTCTAATTAACAGTAACTTCTTTACTTATGTTTCAGTTTGTAAGAAGCGGGATGCGCTCGTCGCTTGACATCTGATTGGACTGCGTCGGCACGTGAAAACTACATTGTGAAATCTGCTAAAACTCCGGGTATCTCTGACACAAA ACGATTCGGCTTCGCAATTTCAACATTACGGTCAAGGCTAACGTATCTTTCTCGGTCAACTTCAGATTATGCCGATTAAATTGTCGTAGCTTTCAAGGCGTTTTGAGTACTGCGGCAGTTGTTGAACCTGCAAGGAGAAGATCTCGAC AACAGAATAAAGCGAAAAATGGGTCTCATGCACTAACACTCAGGCCTCCCTCATAATCTCTGTTTGAGTTTACCAACAACACATATATACATTTCGACAAAATGGCCAAGTTGACCAGTGCCGTTCCGGTGCTCACCGCGCGCGACG TCGCCGGAGCGGTCGAGTTCTGGACCGACCGGCTCGGGTTCTCCCGGGACTTCGTGGAGGACGACTTCGCCGGTGTGGTCCGGGACGACGTGACCCTGTTCATCAGCGCGGTCCAGGACCAGGTGGTGCCAGACAACACCCTG GCCTGGGTGTGGGTGCGCGGCCTGGACGAGCTGTACGCCGAGTGGTCGGAGGTCGTGTCCACGAACTTCCGGGACGCCTCCGGGCCGGCCATGACCGAGATCGGCGAGCAGCCGTGGGGGCGGGAGTTCGCCCTGCGCGAC CCGGCCGGCAACTGCGTGCACTTCGTGGCCGAGGAGCAGGACTGACCGACGCCGACCAACACCGCCGGTCCGACGCGGCCCGACGGGTCCGAGGCCTCGGAGATCTGGGCCCATGCGGCCGCAACAACTACCTCGACTTTGG CTGGGACACTTTCAGTGAGGACAAGAAGCTTCAGAAGCGTGCTATCGAACTCAACCAGGGACGTGCGGCACAAATGGGCATCCTTGCTCTCATGGTGCACGAACAGTTGGGAGTCTCTATCCTTCCTTAAAAATTTAATTTTCATT AGTTGCAGTCACTCCGCTTTGGTTTCGTAACTATAACGGTCCTAAGGTAGCGAACGTTGCAGGCCATGCTGTCCAGGCAGGTAGATGACGACCATCAGGGACAGCTTCAAGGATCGCTCGCGGCTCTTACCAGCCTAACTTCGATC ATTGGACCGCTGATCGTCACGGCGATTTATGCCGCCTCGGCGAGCACATGGAACGGGTTGGCATGGATTGTAGGCGCCGCCCTATACCTTGTCTGCCTCCCCGCGTTGCGTCGCGGTGCATGGAGCCGGGCCACCTCGACCTGAAT GGAAGCCGGCGGCACCTCGCTAACGGATTCACCACTCCAAGAATTGGAGCCAATCAATTCTTGCGGAGAACTGTGAATGCGCAAACCAACCCTTGGCAGAACATATCCATCGCGTCCGCCATCTCCAGCAGCCGCACGCGGCGCA TCGGGGGGGGGGGGGGTTTCAATTCATCATTTTTTTTTTATTCTTTTTTTTGATTTCGGTTTCCTTGAAATTTTTTTGATTCGGTAATCTCCGAACAGAAGGAAGAACGAAGGAAGGAGCACAGACTTAGATTGGTATATATACGCATA TGTAGTGTTGAAGAAACATGAAATTGCCCAGTATTCTTAACCCAACTGCACAGAACAAAAACCTGCAGGAAACGAAGATAAATCATGTCGAAAGCTACATATAAGGAACGTGCTGCTACTCATCCTAGTCCTGTTGCTGCCAAGCTA TTTAATATCATGCACGAAAAGCAAACAAACTTGTGTGCTTCATTGGATGTTCGTACCACCAAGGAATTACTGGAGTTAGTTGAAGCATTAGGTCCCAAAATTTGTTTACTAAAAACACATGTGGATATCTTGACTGATTTTTCCATGGA GGGCACAGTTAAGCCGCTAAAGGCATTATCCGCCAAGTACAATTTTTTACTCTTCGAAGACAGAAAATTTGCTGACATTGGTAATACAGTCAAATTGCAGTACTCTGCGGGTGTATACAGAATAGCAGAATGGGCAGACATTACGAA TGCACACGGTGTGGTGGGCCCAGGTATTGTTAGCGGTTTGAAGCAGGCGGCGGAAGAAGTAACAAAGGAACCTAGAGGCCTTTTGATGTTAGCAGAATTGTCATGCAAGGGCTCCCTAGCTACTGGAGAATAT
TKS cassette	CCCTGCGATAGACCTTTTCCAAACTCACGCAGTCCAAGAAAACAAAGGGGTGAGAAGTATACGCACCTTTCGGTTTCGGCATAATTCTTAAACTCTTGTGGTCACTTTCTTGTGAAGAAGCTAGGGGCACTCGTTTTCCCTCAGAG CCTGCAAACACAAAATTCCTGCAGTCAATTGTCCCAACACTCGGCAAACCGTATGCGCAAGCAACGATGCGCAGAAGGCCGTGGATGGATGGCGACTCGCGATATGGCTTCTTGGGTCGCCAGTGTGGTACGTCCGGCGTATGTC AATACGCGAATTCGGACGACTGGCATCTCTAGGAGGAGGATTCCTTCTTTTATGACATGTTTATTTTATATACATTGATGCTTTCCGACAGTCGGAAGTAATAAATGAATTTATTTCAAGACTACCTATACTCCTTTGACTTGTTCGACTA ATCTTACCGCTTACTAAAATCTCGAAATCACGCTTGACCTCTCGCACGCAAATTTTTGCTGCTGGACGCTACGCACTCGGCCCAATTCTTCTCGGTCCTCGTCGTCGCAATTGTCGTTGCGTTGATCTTGCACCGAAGGAATCAGAGA ATAGAATACCATGAACCACCTGCGTGCCGAAGGACCCGCCTCCGTCCTCGCCATTGGAACCGCCAACCCCGAAAACATCCTCCTCCAGGACGAATTCCCCGACTACTACTTTCGTGTCACCAAGTCCGAACACATGACCCAGTTGAA GGAAAAGTTCCGTAAGATTTGTGACAAGTCCATGATTCGTAAGCGTAACTGCTTCCTCAACGAAGAACACCTCAAGCAGAACCCGCGCCTCGTCGAACACGAAATGCAAACCCTCGACGCCCGTCAGGACATGTTGGTTGTTGAA GTCCCCAAGCTCGGAAAGGACGCCTGCGCCAAGGCCATTAAGGAATGGGGTCAACCTAAGTCCAAGATCACCCACCTGATCTTTACCTCCGCCTCCACCACCGATATGCCCGGAGCAGACTACCACTGCGCTAAGCTCCTCGGACT CTCCCCCTCCGTCAAGCGCGTCATGATGTACCAGCTCGGATGCTACGGAGGTGGAACCGTCCTCCGCATTGCTAAGGACATCGCCGAAAACAACAAGGGTGCCCGTGTCTTGGCCGTCTGCTGCGACATTATGGCTTGCCTTTTTC GTGGCCCGTCCGAATCCGACCTCGAACTCCTCGTTGGCCAGGCCATCTTCGGCGACGGTGCCGCCGCCGTCATTGTCGGCGCCGAACCCGACGAATCCGTCGGCGAACGTCCCATCTTCGAACTCGTCTCCACCGGACAGACCAT CCTCCCCAACTCCGAAGGAACCATTGGAGGACACATCCGCGAAGCCGGTCTCATTTTCGACTTGCACAAGGACGTCCCCATGCTCATCTCGAACAACATTGAAAAGTGTTTGATTGAAGCCTTTACCCCGATTGGAATTTCCGACTG GAACTCCATCTTCTGGATTACCCATCCGGGAGGCAAGGCCATTCTTGATAAGGTCGAAGAAAAGCTCCACCTCAAGTCCGACAAGTTCGTCGATTCCCGTCACGTCCTCTCCGAACACGGAAACATGTCCTCGTCCACGGTCCTCTT CGTCATGGACGAACTCCGTAAGCGTTCCTTGGAAGAAGGCAAATCGACCACCGGTGACGGATTTGAATGGGGTGTCTTGTTCGGTTTTGGACCGGGTTTGACCGTAGAACGCGTTGTTGTTCGCTCCGTCCCGATTAAGTACCAC

	CATCACCACCACCACTAACCGCAACAACTACCTCGACTTTGGCTGGGACACTTTCAGTGAGGACAAGAAGCTTCAGAAGCGTGCTATCGAACTCAACCAGGGACGTGCGGCACAAATGGGCATCCTTGCTCTCATGGTGCACGAA CAGTTGGGAGTCTCTATCCTTCCTTAAAAATTTAATTTTCATTAGTTGCAGTCACTCCGCTTTGGTTT
OAC cassette	ACTAGCTTGATTGGGATATCTCGCTCATGTTTGTCGCGTGCTATGTCTTTTTAGGTACTTTGAACCTACGTTCGTACTTGTATAATATGATCATCGTATTATCGTTTTTCATCCGTCCAGCGCAAAATGCATTAGCAGCTAGTCCTAGCGTG CGGAGCTACCTGgACAGGTGCATGACGGATGCGTGTCCTTCAGTGAcTTTCTAATTAACAGTAACTTCTTTACTTATGTTTCAGTTTGTAAGAAGCGGGATTCGCTCGTCGGTTGACATCTGATTGGACTGCGTCGGCACaTGAAAAC TACATTGTGAAATCTGCTAAAACTCCGGGTATCTCTGACACAAAACGATTCGgCtTCgCAATTTCAACATTACGGTCAAGGCTAACGTATCTTTCTCGGTCAACTTCAGATTAtGCCGAtTAAATTGTCGTAGCTTTCAAGGCGTTTTGA GTACTGCGGCAGTTGTTGAACCTGCAAGGAGAAGATCTCGACAACAGAATAaAGCGAAAAATGGGTCTCATGCACTAACACTCAGgCCTCCCTCATAATCTCTGTTtGAGTTTACCAACAACACATATATACATTTCGACAAAATGGC CGTCAAGCACTTGATCGTTCTCAAGTTCAAGGACGAAATCACCGAAGCCCAGAAGGAAGAATTCTTCAAGACCTACGTCAACCTCGTCAACATCATTCCCGCCATGAAGGATGTTTACTGGGGAAAGGACGTCACCCAGAAGAAC AAGGAAGAAGGTTACACCCACATCGTCGAAGTCACCTTTGAATCCGTTGAAACCATCCAGGACTACATTATCCACCCGGCCCACGTCGGCTTCGGAGACGTCTACCGTTCCTTTTGGGAAAAGTTGTTGATTTTCGACTACACCCCC CGTAAGGAACAGAAGTTGATTTCCGAAGAAGACCTCTAATTTTGTTACATTTACTGACTTCAAGGAGTCGAGGAATCGATACTGCCGTCGTTTCCAGGATCCGAGGTTTCATAAACTCTGTTAACGTTATAGAAACAGACTTACCTCT CCTACGCCATTCACGTAATATTCGCAATATGCTATTCTTCCTCTGAAGACCAGGTTTATGTGCTGCCTGAAACTATTTCAATAAGTCAGCTGCACTTGCACAGGGTTTCACAAGGAAAGCGTGTCTTTTTTTCCAACGTAGGCGTCGCT TTCGTCTGACTCTTACTCTTACATTCACAGCCAATACTTACAATTAGTAAAAAACCTGTGCTCGAGAGTGAAAACGTC
pTKS-1 sequencing	ATGGCCAAGTTGACCAGTGCCGTTCCGGTGCTCACCGCGCGCGACGTCGCCGGAGCGGTCGAGTTCTGGACCGACCGGCTCGGGTTCTCCCGGGACTTCGTGGAGGACGACTTCGCCGGTGTGGTCCGGGACGACGTGACCCT GTTCATCAGCGCGGTCCAGGACCAGGTGGTGCCGGACAACACCCTGGCCTGGGTGTGGGTGCGCGGCCTGGACGAGCTGTACGCCGAGTGGTCGGAGGTCGTGTCCACGAACTTCCGGGACGCCTCCGGGCCGGCCATGACC GAGATCGGCGAGCAGCCGTGGGGGCGGGAGTTCGCCCTGCGCGACCCGGCCGGCAACTGCGTGCACTTCGTGGCCGAGGAGCAGGACTGATTTTGTTACATTGACTTCAAGGAGTCGAGGAATCGATACTGCCGTCGTTTCCA GGATCCGAGGTTTCTATAGACTCTCTATAGACTCTGTTAACCTAATAGAATCAGACATACCTCTCCTGCTATTTTGTTTTTATGAATTTGGCTTTTGCCTCTCTAGTCAGATTTGAATGTTATTTTCCGCCAGGTGTGTTAGTCGGGCTCT CGTTTGAGTTACAAGAGGGATTGAGTGGCGAGGATTCACTCTAATGTAAATATGACTGTGAACAAAACTTTAAAATTACTACGCATCTTCTTTGACTGTCAGATATTCGTCGGTGACAGCAGTCAATGCCTGCAAATTGTCCTCCTGG GTCGCAATTTGGTTTTGGATTGACCTGGTATGCATTATGAAGAAAAAAATTCGTTATTAGCCAACTGCCTAGCGTGCACATTGCATGGTTAGACCTCCTTGACGACTGTGAGCCTACATCCTTCTGCAACAAGCTGCAATCCCTGCGA TAGACCTTTTCCAAACTCACGCAGTCCAAGAAAACAAAGGGGTGAGAAGTATACGCACCTTTCGGTTTCGGCATAATTCTTAAACTCTTGTGGTCACTTTCTTGTGAAGAAGCTAGGGGCACTCGTTTTCCCTCAGAGCCTGCAAA CACAAAATTCCTGCAGTCAATTGTCCCAACACTCGGCAAGCCGTATGCGCAAGCAACGATGCGCAGAAGGCCGTGGATGGATGGCGACTCGCGATATGGCTTCTTGGGTCGCCAGTGTGGTATGTCCGGCGTATGTCAATACGCGA ATTCGGACGACTGGCATCTCTAGGAGGAGGATTCCTTCTTTTATGACATGTTTATTTTATATACATTGATGCTTTCCGACAGTCGGAAGTAATAAATGAATTTATTTCAAGACTACCTATACTCCTTTGACTTGTTCGACTAATCTTACCG CTTACTAAAATCTCGAAATCACGCTTGACCTCTCGCACGCAAATTTTTGCTGCTGGACGCTACGCACTCGGCCCAATTCTTCTCGGTCCTCGTCGTCGCAATTGTCGTTGCGTTGATCTTGCACCGAAGGAATCAGAGAATAGAATAC CATGAACCACCTGCGTGCCGAAGGACCCGCCTCCGTCCTCGCCATTGGAACCGCCAACCCCGAAAACATTCTCCTCCAAGACGAATTCCCTGACTACTACTTCCGCGTGACTAAGAGTGAGCACATGACGCAATTGAAAGAAAAGT TCCGTAAGATCTGTGATAAGTCCATGATCCGTAAGCGTAACTGTTTCCTGAATGAGGAACACCTTAAGCAGAACCCCCGCTTGGTCGAACATGAAATGCAGACCTTGGATGCCCGCCAGGACATGCTCGTCGTTGAAGTCCCTAAGT TGGGTAAAGACGCTTGCGCCAAGGCCATTAAGGAATGGGGACAGCCCAAGAGTAAGATCACCCATTTGATTTTCACATCCGCCTCTACGACCGATATGCCTGGAGCCGATTACCACTGCGCCAAGCTTCTGGGACTGTCCCCCTCC GTTAAGCGCGTCATGATGTACCAGCTTGGATGTTACGGAGGTGGCACCGTCCTCCGTATTGCCAAGGACATTGCCGAAAACAACAAGGGTGCCCGTGTCCTCGCCGTCTGCTGCGACATCATGGCCTGCCTCTTCCGCGGACCCTC CGAATCCGACTTGGAACTCCTCGTGGGACAGGCCATTTTTGGTGACGGCGCCGCCGCCGTCATTGTCGGAGCTGAACCCGACGAATCCGTCGGAGAAAGGCCCATTTTTGAATTGGTCTCCACCGGACAGACCATTCTCCCGAAC TCCGAAGGAACCATCGGCGGACACATTCGTGAAGCCGGTCTCATCTTTGACTTGCACAAGGACGTTCCCATGCTCATTTCCAACAACATTGAAAAGTGCCTCATTGAAGCCTTCACCCCCATTGGAATCTCCGACTGGAATAGTATC TTTTGGATTACCCACCCCGGAGGAAAGGCCATCTTGGATAAGGTGGAAGAAAAGCTCCACCTCAAGTCCGACAAGTTCGTCGACTCCCGTCACGTCTTGTCCGAACACGGAAACATGTCGTCCTCCACCGTCCTCTTTGTCATGGA TGAATTGCGTAAGCGCTCGCTCGAAGAAGGAAAGTCCACCACCGGCGATGGTTTCGAATGGGGCGTTCTCTTCGGATTTGGACCCGGTCTCACCGTCGAACGTGTCGTCGTCCGTTCTGTCCCGATTAAGTACCACCATCACCACC ACCACTAAAAATTTAATTTTCATTAGTTGCAGTCACTCCGCTTTGGTTTCAGGGTAATATAGATCTTCCGCTGCATAACCCTGCTTCGGGGTCATTATAGCGATTTTTTCGGTATATCCATCCTTTTTCGCACGATATACAGGATTTTGCC AAAGGGTTCGTGTAGACTTTCCTTGGTGTATCCAACGGCGTCAGCCGGGCAGGATAGGTGAAGTAGGCCCACCCGCGAGCGGGTGTTCCTTCTTCACTGTCCCTTATTCGCACCTGGCGGTGCTCAACGGGAATCCTGCTCTGCG AGGCTGGCCGGCTACCGCCGGCGTAACAGATGAGGGCAAGCGGATGGCTGATGAAACCAAGCCAACCAGGAAGGGCAGCCCACCTATCAAGGTGTACTGCCTTCCAGACGAACGAAGAGCGATTGAGGAAAAGGCGGCGGC GGCCGGCATGAGCCTGTCGGCCTACCTGCTGGCCGTCGGCCAGGGCTACAAAATCACGGGCGTCGTGGACTATGAGCACGTCCGCGAGCTGGCCCGCATCAATGGCGACCTGGGCCGCCTGGGCGGCCTGCTGAAACTCTGGC TCACCGACGACCCGCGCACGGCGCGGTTCGGTGATGCCACGATCCTCGCCCTGCTGGCGAAGATCGAAGAGAAGCAGGACGAGCTTGGCAAGGTCATGATGGGCGTGGTCCGCCCGAGGGCAGAGCCATGACTTTTTTAGCCG CTAAAACGGCCGGGGGGGTGCGCGTGATTGCCAAGCACGTCCCCATGCGCTCCATCAAGAAGAGGCACTTCGAGCTGTAAGTACATCACCGACGAGCAAGGCAAGACGATCCGCGCCTGTTTTATTGAGAACGTTGTTCGTGTTG GCCTCAATGGTAGCGATGCGTCATTCAGCGAAGTTCTGGTGCTGATGATGTGGTTCGCTTTGCCACTGGTCAATGTGGTAAGCCCGTGTAATGTCAGTAACCTTTTTACTGATCTCAGCTTGAGCACGGTCGCTGATGAGCTTATCCA TGGCCCCACGGTAACGGATATGATCCTCTAGGGCGTTGACAAATTCTTTGTCGGTTTTCATGGGGTAGACGTCAGTGACCAGGGAACGTCTCCCTACAAAAAGTTGCGCATACTTTGCTCCGTTGTCGACGGCAGGGGTGTCGGAC CAGATTGTATCTGTGGCAACGGCCTCATTGCGTCAATGGACCTTTAAAGCCGGGAAACGAGACTTGAAATGTTTACGTAGAGGTGCATTATAGACCTCACGCGCATATTGAGTGGTTGCAAAAATGGTTTTGCGAACGGTATCACTG GAGACCCATGCCAGGCAAGGACGGAGGGCATCATAATCATGTTCATTGCGTTGGACAGCATGCTTGTTACACGTAAGTATACGGTCGAGAGCATCGTGACGTTGAGAATTACAGATGGCAACGTGTCGGTGCATGTATTGGCCGAG ATTGTCAAATCGTGGCTCAATATATGGCATGCCAGGTAAGTCATGGATGTCGGTATGCCATTCAGCCTTCATGTCGATTTCGTTGTCGAGAACTGATGGGTCCCAGTCAACGTCAGAAGTAAGAACAACATGGGGAAGGGAATGAA GTTCATGACTGGTGGGTGCGCGCATATCCATGTACGGAAGACCCTGTCGTATGTTTAGTGGGATGATGTAATCATCCAGGGTAACAATACGTTGGTTGCCGCCCACGGTACGAGACCGATCTTGAACACAATTGTGGCAATGTTCAA GTTGGGCGCTGGAATGGATGGTTTTACCTTTACCAAGATGCGCGTATTGATGCATGATAACAACAATGGGCCCTCGTTGCGATTCGACAAGACCGGCAGCCGTGACAATGTCTAGATTGGACAAGGTATGTTCATTTATACCGGTTA

	TGTTGGCTGAACGTCCAGTTTTGTGCAGTACGGTAACATCACTCCCCGCAAGTCCACCGTTGGCACCGCGATCGACAAGTGCAGATGTGGTATTTTGTACTGTGTGTCGGGAGACTTGGTACTGTAACACATTTGACTGAAGTGACT TGGTGGTACCATGAGGACGGAGGGAACCCGTTGATACGGTGTTGCGTGACGCTGCAAGTACCTTACGTATGTCGCCTGGATCCATACGTCCAACCCGATCAGAAAGATGTGCTAGGAGTTCCGTTTCTGGTGCACAATCATGAAAG GTATCCACGGGAGTTCCATTGTTGTCGTCCGGGGCTGCGTCGCGACTGCCAGTTGCATGTACATGCGCCATCAAGGGACGTGCCAATCCATTACTAACCGGGAGAACCTTAGCTGGGGCAGCCAATCCCTGAAGTATAGCCTTAGC ATCATCTGAGAGCTGGTTCCACATATCTCTAGGGATATAAGGTCGTTCACGGTTAGTGGGCGTACTATGATGTCGGTTATTAGTACAATTCTCCCTGCGGGCATGCGCATTGGCTTCATAGAGTACGGAAGGTGACAAGTCAATATTGT AGTTAACATCCGGATCAGTGTCAAAGTCTGTAGGATGGTAAGAAAGATCAGTAGAATGAATACTACGCTTTTCCTTGGGACTACGGGAATTAGAGAAGTTGTTTCCTTTATTGTAGAGTGACGCTGAAGCAAGTAGAAGACTAAGG TAACTCTCGTAGCTAATAGGATTACCTCCTTTGGCTAGGTCAAGAGTGGCTGTGATCTTCACTTGACAAAGTTCCGGTACATTGTGGACAGCATTCTCCAAAAGACTAAGACACAGTTGCTTTGGGAGTTGCTCAGCCATTGGTACA GTATTGTGGTAGATACAAAGGTGGTTCTTCCAATGAAGGATAAATCCTTCTGCTGTGCCTGTCCATGAGGATCCATATTTCGCCGTAGTTAGGTAACCAAGCGTGGTGGCTGAACTGATCTTCGCACTTGCTGATTCCGTATAGTGTTT GACAACTTTACAAAACACTTCTTGCGCAGTTCGCTCTAGCCTGGACAGAGAAGGGACAATCTTCGTCGTTAAGACTCGTGCGAATAGCAAAAGATCACAAAATAGCACATCGGCACCGACCAACGATTATTTCCAAGGAAAAAAA GAATGCTTCACTACAAGAAATTGTGTCATCCCTATACAGAGTCTTGTTACTGTGACAGAAAATTGATGGAAGATGTGGCGGATTGCCTTTACACTAGCCAACTTGTTCGACTAATTGCAGCTTCTTCTGAGAGGCTTCACCGAGTAAC GCGAAGAACACCGGTGTCTCGTACATGCTCGTCGGTGAACGCTCGTCCAATGACACCCCCCACTTTGTATCAATATCCCAACTTGGTAGTGAACTGGAATGATACATGCAATTTCGCGCCGCATCAACAGCCACGGGCACCATCGAC GAATAGACTCGGTCGAGCTGGTTGCCCTCGCCGCTGGGCTGGCGGCCGTCTATGGCCCTGCAAACGCGCCAGAAACGCCGTCGAAGCCGTGTGCGAGACACCGCGGCCGGCCGCCGGCGTTGTGGATACCTCGCGGAAAACTT GGCCCTCACTGACAGATGAGGGGCGGACGTTGACACTTGAGGGGCCGACTCACCCGGCGCGGCGTTGACAGATGAGGGGCAGGCTCGATTTCGGCCGGCGACGTGGAGCTGGCCAGCCTCGCAAATCGGCGAAAACGCCTG ATTTTACGCGAGTTTCCCACAGATGATGTGGACAAGCCTGGGGATAAGTGCCCTGCGGTATTGACACTTGAGGGGCGCGACTACTGACAGATGAGGGGCGCGATCCTTGACACTTGAGGGGCAGAGTGCTGACAGATGAGGGG CGCACCTATTGACATTTGAGGGGCTGTCCACAGGCAGAAAATCCAGCATTTGCAAGGGTTTCCGCCCGTTTTTCGGCCACCGCTAACCTGTCTTTTAACCTGCTTTTAAACCAATATTTATAAACCTTGTTTTTAACCAGGGCTGCGC CCTGTGCGCGTGACCGCGCACGCCGAAGGGGGGTGCCCCCCCTTCTCGAACCCTCCCGGTCGAGTGAGCGAGGAAGCACCAGGGAACAGCACTTATATATTCTGCTTACACACGATGCCTGAAAAAACTTCCCTTGGGGTTATCC ACTTATCCACGGGGATATTTTTATAATTATTTTTTTTATAGTTTTTAGATCTTCTTTTTTAGAGCGCCTTGTAGGCCTTTATCCATGCTGGTTCTAGAGAAGGTGTTGTGACAAATTGCCCTTTCAGTGTGACAAATCACCCTCAAATGAC AGTCCTGTCTGTGACAAATTGCCCTTAACCCTGTGACAAATTGCCCTCAGAAGAAGCTGTTTTTTCACAAAGTTATCCCTGCTTATTGACTCTTTTTTATTTAGTGTGACAATCTAAAAACTTGTCACACTTCACATGGATCTGTCATGG CGGAAACAGCGGTTATCAATCACAAGAAACGTAAAAATAGCCCGCGAATCGTCCAGTCAAACGACCTCACTGAGGCGGCATATAGTCTCTCCCGGGATCAAAAACGTATGCTGTATCTGTTCGTTGACCAGATCAGAAAATCTGATG GCACCCTACAGGAACATGACGGTATCTGCGAGATCCATGTTGCTAAATATGCTGAAATATTCGGATTGACCTCTGCGGAAGCCAGTAAGGATATACGGCAGGCATTGAAGAGTTTCGCGGGGAAGGAAGTGGTTTTTTATCGCCCT GAAGAGGATGCCGGCGATGAAAAAGGCTATGAATCTTTTCCTTGGTTTATCAAACGTGCGCACAGTCCATCCAGAGGGCTTTACAGTGTACATATCAACCCATATCTCATTCCCTTCTTTATCGGGTTACAGAACCGGTTTACGCAGT TTCGGCTTAGTGAAACAAAAGAAATCACCAATCCGTATGCCATGCGTTTATACGAATCCCTGTGTCAGTATCGTAAGCCGGATGGCTCAGGCATCGTCTCTCTGAAAATCGACTGGATCATAGAGCGTTACCAGCTGCCTCAAAGTTA CCAGCGTATGCCTGACTTCCGCCGCCGCTTCCTGCAGGTCTGTGTTAATGAGATCAACAGCAGAACTCCAATGCGCCTCTCATACATTGAGAAAAAGAAAGGCCGCCAGACGACTCATATCGTATTTTCCTTCCGCGATATCACTTCC ATGACGACAGGATAGTCTGAGGGTTATCTGTCACAGATTTGAGGGTGGTTCGTCACATTTGTTCTGACCTACTGAGGGTAATTTGTCACAGTTTTGCTGTTTCCTTCAGCCTGCATGGATTTTCTCATACTTTTTGAACTGTAATTTTT AAGGAAGCCAAATTTGAGGGCAGTTTGTCACAGTTGATTTCCTTCTCTTTCCCTTCGTCATGTGACCTGATATCGGGGGTTAGTTCGTCATCATTGATGAGGGTTGATTATCACAGTTTATTACTCTGAATTGGCTATCCGCGTGTGTA CCTCTACCTGGAGTTTTTCCCACGGTGGATATTTCTTCTTGCGCTGAGCGTAAGAGCTATCTGACAGAACAGTTCTTCTTTGCTTCCTCGCCAGTTCGCTCGCTATGCTCGGTTACACGGCTGCGGCGAGCATCACGTGCTATAAAAA TAATTATAATTTAAATTTTTTAATATAAATATATAAATTAAAAATAGAAAGTAAAAAAAGAAATTAAAGAAAAAATAGTTTTTGTTTTCCGAAGATGTAAAAGACTCTAGGGGGATCGCCAACAAATACTACCTTTTACCTTGCTCTTCCT GCTCTCAGGTATTAATGCCGAATTGTTTCATCTTGTCTGTGTAGAAGACCACACACGAAAATCCTGTGATTTTACATTTTACTTATCGTTAATCGAATGTATATCTATTTAATCTGCTTTTCTTGTCTAATAAATATATATGTAAAGTACGCTT TTTGTTGAAATTTTTTAAACCTTTGTTTATTTTTTTTTCTTCATTCCGTAACTCTTCTACCTTCTTTATTTACTTTCTAAAATCCAAATACAAAACATAAAAATAAATAAACACAGAGTAAATTCCCAAATTATTCCATCATTAAAAGATACG AGGCGCGTGTAAGTTACAGGCAAGCGATCCTAGTACACTCTATATTTTTTTATGCCTCGGTAATGATTTTCATTTTTTTTTTCCACCTAGCGGATGACTCTTTTTTTTTCTTAGCGATTGGCATTATCACATAATGAATTATACATTATATAA AGTAATGTGATTTCTTCGAAGAATATACTAAAAAATGAGCAGGCAAGATAAACGAAGGCAAAGATGACAGAGCAGAAAGCCCTAGTAAAGCGTATTACAAATGAAACCAAGATTCAGATTGCGATCTCTTTAAAGGGTGGTCCCCT AGCGATAGAGCACTCGATCTTCCCAGAAAAAGAGGCAGAAGCAGTAGCAGAACAGGCCACACAATCGCAAGTGATTAACGTCCACACAGGTATAGGGTTTCTGGACCATATGATACATGCTCTGGCCAAGCATTCCGGCTGGTCG CTAATCGTTGAGTGCATTGGTGACTTACACATAGACGACCATCACACCACTGAAGACTGCGGGATTGCTCTCGGTCAAGCTTTTAAAGAGGCCCTAGGGGCCGTGCGTGGAGTAAAAAGGTTTGGATCAGGATTTGCGCCTTTGG ATGAGGCACTTTCCAGAGCGGTGGTAGATCTTTCGAACAGGCCGTACGCAGTTGTCGAACTTGGTTTGCAAAGGGAGAAAGTAGGAGATCTCTCTTGCGAGATGATCCCGCATTTTCTTGAAAGCTTTGCAGAGGCTAGCAGAAT TACCCTCCACGTTGATTGTCTGCGAGGCAAGAATGATCATCACCGTAGTGAGAGTGCGTTCAAGGCTCTTGCGGTTGCCATAAGAGAAGCCACCTCGCCCAATGGTACCAACGATGTTCCCTCCACCAAAGGTGTTCTTATGTAGTT TTACACAGGAGTCTGGACTTGACGCTAGTGATAATAAGTGACTGAGGTATGTGCTCTTCTTATCTCCTTTTGTAGTGTTGCTCTTATTTTAAACAACTTTGCGGTTTTTTGATGACTTTGCGATTTTGTTGTTGCTTTGCAGTAAATTGC AAGATTTAATAAAAAAACGCAAAGCAATGATTAAAGGATGTTCAGAATGAAACTCATGGAAACACTTAACCAGTGCATAAACGCTGGTCATGAAATGACGAAGGCTATCGCCATTGCACAGTTTAATGATGACAGCCCGGAAGCGA GGAAAATAACCCGGCGCTGGAGAATAGGTGAAGCAGCGGATTTAGTTGGGGTTTCTTCTCAGGCTATCAGAGATGCCGAGAAAGCAGGGCGACTACCGCACCCGGATATGGAAATTCGAGGACGGGTTGAGCAACGTGTTGGT TATACAATTGAACAAATTAATCATATGCGTGATGTGTTTGGTACGCGATTGCGACGTGCTGAAGACGTATTTCCACCGGTGATCGGGGTTGCTGCCCATAAAGGTGGCGTTTACAAAACCTCAGTTTCTGTTCATCTTGCTCAGGATCT GGCTCTGAAGGGGCTACGTGTTTTGCTCGTGGAAGGTAACGACCCCCAGGGAACAGCCTCAATGTATCACGGATGGGTACCAGATCTTCATATTCATGCAGAAGACACTCTCCTGCCTTTCTATCTTGGGGAAAAGGACGATGTCA CTTATGCAATAAAGCCCACTTGCTGGCCGGGGCTTGACATTATTCCTTCCTGTCTGGCTCTGCACCGTATTGAAACTGAGTTAATGGGCAAATTTGATGAAGGTAAACTGCCCACCGATCCACACCTGATGCTCCGACTGGCCATTGA AACTGTTGCTCATGACTATGATGTCATAGTTATTGACAGCGCGCCTAACCTGGGTATCGGCACGATTAATGTCGTATGTGCTGCTGATGTGCTGATTGTTCCCACGCCTGCTGAGTTGTTTGACTACACCTCCGCACTGCAGTTTTTCG ATATGCTTCGTGATCTGCTCAAGAACGTTGATCTTAAAGGGTTCGAGCCTGATGTACGTATTTTGCTTACCAAATACAGCAATAGCAATGGCTCTCAGTCCCCGTGGATGGAGGAGCAAATTCGGGATGCCTGGGGAAGCATGGTTC

	TAAAAAATGTTGTACGTGAAACGGATGAAGTTGGTAAAGGTCAGATCCGGATGAGAACTGTTTTTGAACAGGCCATTGATCAACGCTCTTCAACTGGTGCCTGGAGAAATGCTCTTTCTATTTGGGAACCTGTCTGCAATGAAATTT TCGATCGTCTGATTAAACCACGCTGGGAGATTAGATAATGAAGCGTGCGCCTGTTATTCCAAAACATACGCTCAATACTCAACCGGTTGAAGATACTTCGTTATCGACACCAGCTGCCCCGATGGTGGATTCGTTAATTGCGCGCGTA GGAGTAATGGCTCGCGGTAATGCCATTACTTTGCCTGTATGTGGTCGGGATGTGAAGTTTACTCTTGAAGTGCTCCGGGGTGATAGTGTTGAGAAGACCTCTCGGGTATGGTCAGGTAATGAACGTGACCAGGAGCTGCTTACTGA GGACGCACTGGATGATCTCATCCCTTCTTTTCTACTGACTGGTCAACAGACACCGGCGTTCGGTCGAAGAGTATCTGGTGTCATAGAAATTGCCGATGGGAGTCGCCGTCGTAAAGCTGCTGCACTTACCGAAAGTGATTATCGTGT TCTGGTTGGCGAGCTGGATGATGAGCAGATGGCTGCATTATCCAGATTGGGTAACGATTATCGCCCAACAAGTGCTTATGAACGTGGTCAGCGTTATGCAAGCCGATTGCAGAATGAATTTGCTGGAAATATTTCTGCGCTGGCTGA TGCGGAAAATATTTCACGTAAGATTATTACCCGCTGTATCAACACCGCCAAATTGCCTAAATCAGTTGTTGCTCTTTTTTCTCACCCCGGTGAACTATCTGCCCGGTCAGGTGATGCACTTCAAAAAGCCTTTACAGATAAAGAGGAAT TACTTAAGCAGCAGGCATCTAACCTTCATGAGCAGAAAAAAGCTGGGGTGATATTTGAAGCTGAAGAAGTTATCACTCTTTTAACTTCTGTGCTTAAAACGTCATCTGCATCAAGAACTAGTTTAAGCTCACGACATCAGTTTGCTCC TGGAGCGACAGTATTGTATAAGGGCGATAAAATGGTGCTTAACCTGGACAGGTCTCGTGTTCCAACTGAGTGTATAGAGAAAATTGAGGCCATTCTTAAGGAACTTGAAAAGCCAGCACCCTGATGCGACCTCGTTTTAGTCTACG TTTATCTGTCTTTACTTAATGTCCTTTGTTACAGGCCAGAAAGCATAACTGGCCTGAATATTCTCTCTGGGCCCACTGTTCCACTTGTATCGTCGGTCTGATAATCAGACTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATTATTA GTCTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATAATCAGACTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGGACCATGGTCCCA CTCGTATCGTCGGTCTGATTATTAGTCTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGAACCACGGTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATTA TTAGTCTGGGACCACGATCCCACTCGTGTTGTCGGTCTGATTATCGGTCTGGGACCACGGTCCCACTTGTATTGTCGATCAGACTATCAGCGTGAGACTACGATTCCATCAATGCCTGTCAAGGGCAAGTATTGACATGTCGTCGTAA CCTGTAGAACGGAGTAACCTCGGTGTGCGGTTGTATGCCTGCTGTGGATTGCTGCTGTGTCCTGCTTATCCACAACATTTTGCGCACGGTTATGTGGACAAAATACCTGGTTACCCAGGCCGTGCCGGCACGTTAACCGGGCTGCAT CCGATGCAAGTGTGTCGCTGTCGACGAGCTCGCGAGCTCGGACATGAGGTTGCCCCGTATTCAGTGTCGCTGATTTGTATTGTCTGAAGTTGTTTTTACGTTAAGTTGATGTAGATCAATTAATACGATACCTGCGTCATAATTGATTA TTTGACGTGGTTTGATGGCCTCCACGCACGTTGTGATATGTAGATGATAATCATTATCACTTTACGGGTCCTTTCCGGTGATCCGACAGGTTACGGGGCGGCGACCTCGCGGGTTTTCGCTATTTATGAAAATTTTCCGGTTTAAGGC GTTTCCGTTCTTCTTCGTCATAACTTAATGTTTTTATTTAAAATACCCTCTGAAAAGAAAGGAAACGACAGGTGCTGAAAGCGAGCTTTTTGGCCTCTGTCGTTTCCTTTCTCTGTTTTTGTCCGTGGAATGAACAATGGAAGTCCGA GCTCATCGCTAATAACTTCGTATAGCATACATTATACGAAGTTATATTCGATGCGGCCGCAAGGGGTTCGCGTCAGCGGGTGTTGGCGGGTGTCGGGGCTGGCTTAACTATGCGGCATCAGAGCAGATTGTACTGAGAGTGCACCAT ATGCGGTGTGAAATACCACACAGATGCGTAAGGAGAAAATACCGCATCAGGCGCCATTCGCCATTCAGCTGCGCAACTGTTGGGAAGGGCGATCGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTG CAAGGCGATTAAGTTGGGTAACGCCAGGGTTTTCCCAGTCACGACGTTGTAAAACGACGGCCAGTGAATTGTAATACGACTCACTATAGGGCGAATTCGAGCTCGGTACCCGGGGATCCTCTAGAGTCGACCTGCAGGCATGCAA GCTTGAGTATTCTATAGTCTCACCTAAATAGCTTGGCGTAATCATGGTCATAGCTGTTTCCTGTGTGAAATTGTTATCCGCTCACAATTCCACACAACATACGAGCCGGAAGCATAAAGTGTAAAGCCTGGGGTGCCTAATGAGTGAG CTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGCGAACCCCTTGCGGCCGCCCGGGCCGTCGACCAATTCTCATGTTTGACAGCTTATCATCG AATTTCTGCCATTCATCCGCTTATTATCACTTATTCAGGCGTAGCAACCAGGCGTTTAAGGGCACCAATAACTGCCTTAAAAAAATTACGCCCCGCCCTGCCACTCATCGCAGTACTGTTGTAATTCATTAAGCATTCTGCCGACATGGA AGCCATCACAAACGGCATGATGAACCTGAATCGCCAGCGGCATCAGCACCTTGTCGCCTTGCGTATAATATTTGCCCATGGTGAAAACGGGGGCGAAGAAGTTGTCCATATTGGCCACGTTTAAATCAAAACTGGTGAAACTCACC CAGGGATTGGCTGAGACGAAAAACATATTCTCAATAAACCCTTTAGGGAAATAGGCCAGGTTTTCACCGTAACACGCCACATCTTGCGAATATATGTGTAGAAACTGCCGGAAATCGTCGTGGTattcactccagagcgatgaaaacgtttcag tttgctcatggaaaacggtgtaACAAGGGTGAACACTATCCCATATCACCAGCTCACCGTCTTTCATTGCCATACGAAATTCCGGATGAGCATTCATCAGGCGGGCAAGAATGTGAATAAAGGCCGGATAAAACTTGTGCTTATTTTTCTTTA CGGTCTTTAAAAAGGCCGTAATATCCAGCTGAACGGTCTGGTTATAGGTACATTGAGCAACTGACTGAAATGCCTCAAAATGTTCTTTACGATGCCATTGGGATATATCAACGGTGGTATATCCAGTGATTTTTTTCTCCATTTTAGCTT CCTTAGCTCCTGAAAATCTCGATAACTCAAAAAATACGCCCGGTAGTGATCTTATTTCATTATGGTGAAAGTTGGAACCTCTTACGTGCCGATCAACGTCTCATTTTCGCCAAAAGTTGGCCCAGGGCTTCCCGGTATCAACAGGGAC ACCAGGATTTATTTATTCTGCGAAGTGATCTTCCGTCACAGGTATTTATTCGCGATAAGCTCATGGAGCGGCGTAACCGTCGCACAGGAAGGACAGAGAAAGCGCGGATCTGGGAAGTGACGGACAGAACGGTCAGGACCTGGA TTGGGGAGGCGGTTGCCGCCGCTGCTGCTGACGGTGTGACGTTCTCTGTTCCGGTCACACCACATACGTTCCGCCATTCCTATGCGATGCACATGCTGTATGCCGGTATACCGCTGAAAGTTCTGCAAAGCCTGATGGGACATAAGT CCATCAGTTCAACGGAAGTCTACACGAAGGTTTTTGCGCTGGATGTGGCTGCGTTAAGCCTACTTATTTAGAACGAGAAGTCAGACCGAGGGGTACTAAAATTCTAAGGGTTGAGAGGTATCTTGATTCCGGGTCTATGGAAGCCC ATCCTTGTTGAAGCTTGAACACGATCCTTGTGAAAGGCCGACGTTGCGCGAAAAAACAGCCTGCCGATTTCTTTCCTTCTTTCTCGTCTCAACCTATATACTTTCATAATCTCTGTTAGAGTTTACCAACAACACATATATACATTTCGA CAAA
pTKS-2 sequencing	GAGCACAAGAGGTGACAAAAGCCACCGGCTGGATCGCACTTCTCGGAATTTCCCCCCTACTATCAAACAAATTCGAATTGCCAAAGGTGAAGGGACTAACTGTAAATCCTGATCAATCAAGGTCTCAATCAAGTACAATGGGCTAC AATGATATTTAGATGGGAACACAATGAAACGAATTGAAACTTCTACTGACAGGAGCGCAATTGACTTGTGTAGCTTTTCATGAGCACTTGATTGCTACCGATTGTGAACGGGATGGGGAAAGACTCGAAAAGGTGCATGCTTCCGA TAATCTACTATATTTTCTAGAATCAAATAATATTTAAATGAATGAGGTCCTCAGCGTACGTTAAGCCTACTTATTTAGAACGAGAAGTCAGACCGAGGGGTACTAAAATTCTAAGGGTTGAGAGGTATCTTGATTCCGGGTCTATGGAA GCCCATCCTTGTTGAAGCTTGAACACGATCCTTGTGAAAGGCCGACGTTGCGCGAAAAAACAGCCTGCCGATTTCTTTCCTTCTTTCTCGTCTCAACCTATATACTTTCATAATCTCTGTTAGAGTTTACCAACAACACATATATACATT TCGACAAAATGGCCAAGTTGACCAGTGCCGTTCCGGTGCTCACCGCGCGCGACGTCGCCGGAGCGGTCGAGTTCTGGACCGACCGGCTCGGGTTCTCCCGGGACTTCGTGGAGGACGACTTCGCCGGTGTGGTCCGGGACGAC GTGACCCTGTTCATCAGCGCGGTCCAGGACCAGGTGGTGCCGGACAACACCCTGGCCTGGGTGTGGGTGCGCGGCCTGGACGAGCTGTACGCCGAGTGGTCGGAGGTCGTGTCCACGAACTTCCGGGACGCCTCCGGGCCGG CCATGACCGAGATCGGCGAGCAGCCGTGGGGGCGGGAGTTCGCCCTGCGCGACCCGGCCGGCAACTGCGTGCACTTCGTGGCCGAGGAGCAGGACTGATTTTGTTACATTGACTTCAAGGAGTCGAGGAATCGATACTGCCGT CGTTTCCAGGATCCGAGGTTTCTATAGACTCTCTATAGACTCTGTTAACCTAATAGAATCAGACATACCTCTCCTGCTATTTTGTTTTTATGAATTTGGCTTTTGCCTCTCTAGTCAGATTTGAATGTTATTTTCCGCCAGGTGTGTTAGTC GGGCTCTCGTTTGAGTTACAAGAGGGATTGAGTGGCGAGGATTCACTCTAATGTAAATATGACTGTGAACAAAACTTTAAAATTACTACGCATCTTCTTTGACTGTCAGATATTCGTCGGTGACAGCAGTCAATGCCTGCAAATTGTC CTCCTGGGTCGCAATTTGGTTTTGGATTGACCTGGTATGCATTATGAAGAAAAAAATTCGTTATTAGCCAACTGCCTAGCGTGCACATTGCATGGTTAGACCTCCTTGACGACTGTGAGCCTACATCCTTCTGCAACAAGCTGCAATC

	CCTGCGATAGACCTTTTCCAAACTCACGCAGTCCAAGAAAACAAAGGGGTGAGAAGTATACGCACCTTTCGGTTTCGGCATAATTCTTAAACTCTTGTGGTCACTTTCTTGTGAAGAAGCTAGGGGCACTCGTTTTCCCTCAGAGC CTGCAAACACAAAATTCCTGCAGTCAATTGTCCCAACACTCGGCAAGCCGTATGCGCAAGCAACGATGCGCAGAAGGCCGTGGATGGATGGCGACTCGCGATATGGCTTCTTGGGTCGCCAGTGTGGTATGTCCGGCGTATGTCA ATACGCGAATTCGGACGACTGGCATCTCTAGGAGGAGGATTCCTTCTTTTATGACATGTTTATTTTATATACATTGATGCTTTCCGACAGTCGGAAGTAATAAATGAATTTATTTCAAGACTACCTATACTCCTTTGACTTGTTCGACTAA TCTTACCGCTTACTAAAATCTCGAAATCACGCTTGACCTCTCGCACGCAAATTTTTGCTGCTGGACGCTACGCACTCGGCCCAATTCTTCTCGGTCCTCGTCGTCGCAATTGTCGTTGCGTTGATCTTGCACCGAAGGAATCAGAGAA TAGAATACCATGAACCACCTGCGTGCCGAAGGACCCGCCTCCGTCCTCGCCATTGGAACCGCCAACCCCGAAAACATTCTCCTCCAAGACGAATTCCCTGACTACTACTTCCGCGTGACTAAGAGTGAGCACATGACGCAATTGAA AGAAAAGTTCCGTAAGATCTGTGATAAGTCCATGATCCGTAAGCGTAACTGTTTCCTGAATGAGGAACACCTTAAGCAGAACCCCCGCTTGGTCGAACATGAAATGCAGACCTTGGATGCCCGCCAGGACATGCTCGTCGTTGAAG TCCCTAAGTTGGGTAAAGACGCTTGCGCCAAGGCCATTAAGGAATGGGGACAGCCCAAGAGTAAGATCACCCATTTGATTTTCACATCCGCCTCTACGACCGATATGCCTGGAGCCGATTACCACTGCGCCAAGCTTCTGGGACTG TCCCCCTCCGTTAAGCGCGTCATGATGTACCAGCTTGGATGTTACGGAGGTGGCACCGTCCTCCGTATTGCCAAGGACATTGCCGAAAACAACAAGGGTGCCCGTGTCCTCGCCGTCTGCTGCGACATCATGGCCTGCCTCTTCCGC GGACCCTCCGAATCCGACTTGGAACTCCTCGTGGGACAGGCCATTTTTGGTGACGGCGCCGCCGCCGTCATTGTCGGAGCTGAACCCGACGAATCCGTCGGAGAAAGGCCCATTTTTGAATTGGTCTCCACCGGACAGACCATTC TCCCGAACTCCGAAGGAACCATCGGCGGACACATTCGTGAAGCCGGTCTCATCTTTGACTTGCACAAGGACGTTCCCATGCTCATTTCCAACAACATTGAAAAGTGCCTCATTGAAGCCTTCACCCCCATTGGAATCTCCGACTGGA ATAGTATCTTTTGGATTACCCACCCCGGAGGAAAGGCCATCTTGGATAAGGTGGAAGAAAAGCTCCACCTCAAGTCCGACAAGTTCGTCGACTCCCGTCACGTCTTGTCCGAACACGGAAACATGTCGTCCTCCACCGTCCTCTTTG TCATGGATGAATTGCGTAAGCGCTCGCTCGAAGAAGGAAAGTCCACCACCGGCGATGGTTTCGAATGGGGCGTTCTCTTCGGATTTGGACCCGGTCTCACCGTCGAACGTGTCGTCGTCCGTTCTGTCCCGATTAAGTACCACCAT CACCACCACCACTAAAAATTTAATTTTCATTAGTTGCAGTCACTCCGCTTTGGTTTCAGGGTAATATAGATCTTCCGCTGCATAACCCTGCTTCGGGGTCATTATAGCGATTTTTTCGGTATATCCATCCTTTTTCGCACGATATACAGGA TTTTGCCAAAGGGTTCGTGTAGACTTTCCTTGGTGTATCCAACGGCGTCAGCCGGGCAGGATAGGTGAAGTAGGCCCACCCGCGAGCGGGTGTTCCTTCTTCACTGTCCCTTATTCGCACCTGGCGGTGCTCAACGGGAATCCTGC TCTGCGAGGCTGGCCGGCTACCGCCGGCGTAACAGATGAGGGCAAGCGGATGGCTGATGAAACCAAGCCAACCAGGAAGGGCAGCCCACCTATCAAGGTGTACTGCCTTCCAGACGAACGAAGAGCGATTGAGGAAAAGGCG GCGGCGGCCGGCATGAGCCTGTCGGCCTACCTGCTGGCCGTCGGCCAGGGCTACAAAATCACGGGCGTCGTGGACTATGAGCACGTCCGCGAGCTGGCCCGCATCAATGGCGACCTGGGCCGCCTGGGCGGCCTGCTGAAACT CTGGCTCACCGACGACCCGCGCACGGCGCGGTTCGGTGATGCCACGATCCTCGCCCTGCTGGCGAAGATCGAAGAGAAGCAGGACGAGCTTGGCAAGGTCATGATGGGCGTGGTCCGCCCGAGGGCAGAGCCATGACTTTTTT AGCCGCTAAAACGGCCGGGGGGTGCGCGTGATTGCCAAGCACGTCCCCATGCGCTCCATCAAGAAGAGGCACTTCGAGCTGTAAGTACATCACCGACGAGCAAGGCAAGACGATCCGCGCCTGTTTTATTGAGAACGTTGTTCG TGTTGGCCTCAATGGTAGCGATGCGTCATTCAGCGAAGTTCTGGTGCTGATGATGTGGTTCGCTTTGCCACTGGTCAATGTGGTAAGCCCGTGTAATGTCAGTAACCTTTTTACTGATCTCAGCTTGAGCACGGTCGCTGATGAGCTT ATCCATGGCCCCACGGTAACGGATATGATCCTCTAGGGCGTTGACAAATTCTTTGTCGGTTTTCATGGGGTAGACGTCAGTGACCAGGGAACGTCTCCCTACAAAAAGTTGCGCATACTTTGCTCCGTTGTCGACGGCAGGGGTGT CGGACCAGATTGTATCTGTGGCAACGGCCTCATTGCGTCAATGGACCTTTAAAGCCGGGAAACGAGACTTGAAATGTTTACGTAGAGGTGCATTATAGACCTCACGCGCATATTGAGTGGTTGCAAAAATGGTTTTGCGAACGGTA TCACTGGAGACCCATGCCAGGCAAGGACGGAGGGCATCATAATCATGTTCATTGCGTTGGACAGCATGCTTGTTACACGTAAGTATACGGTCGAGAGCATCGTGACGTTGAGAATTACAGATGGCAACGTGTCGGTGCATGTATTG GCCGAGATTGTCAAATCGTGGCTCAATATATGGCATGCCAGGTAAGTCATGGATGTCGGTATGCCATTCAGCCTTCATGTCGATTTCGTTGTCGAGAACTGATGGGTCCCAGTCAACGTCAGAAGTAAGAACAACATGGGGAAGGG AATGAAGTTCATGACTGGTGGGTGCGCGCATATCCATGTACGGAAGACCCTGTCGTATGTTTAGTGGGATGATGTAATCATCCAGGGTAACAATACGTTGGTTGCCGCCCACGGTACGAGACCGATCTTGAACACAATTGTGGCAAT GTTCAAGTTGGGCGCTGGAATGGATGGTTTTACCTTTACCAAGATGCGCGTATTGATGCATGATAACAACAATGGGCCCTCGTTGCGATTCGACAAGACCGGCAGCCGTGACAATGTCTAGATTGGACAAGGTATGTTCATTTATAC CGGTTATGTTGGCTGAACGTCCAGTTTTGTGCAGTACGGTAACATCACTCCCCGCAAGTCCACCGTTGGCACCGCGATCGACAAGTGCAGATGTGGTATTTTGTACTGTGTGTCGGGAGACTTGGTACTGTAACACATTTGACTGAA GTGACTTGGTGGTACCATGAGGACGGAGGGAACCCGTTGATACGGTGTTGCGTGACGCTGCAAGTACCTTACGTATGTCGCCTGGATCCATACGTCCAACCCGATCAGAAAGATGTGCTAGGAGTTCCGTTTCTGGTGCACAATCA TGAAAGGTATCCACGGGAGTTCCATTGTTGTCGTCCGGGGCTGCGTCGCGACTGCCAGTTGCATGTACATGCGCCATCAAGGGACGTGCCAATCCATTACTAACCGGGAGAACCTTAGCTGGGGCAGCCAATCCCTGAAGTATAGC CTTAGCATCATCTGAGAGCTGGTTCCACATATCTCTAGGGATATAAGGTCGTTCACGGTTAGTGGGCGTACTATGATGTCGGTTATTAGTACAATTCTCCCTGCGGGCATGCGCATTGGCTTCATAGAGTACGGAAGGTGACAAGTCA ATATTGTAGTTAACATCCGGATCAGTGTCAAAGTCTGTAGGATGGTAAGAAAGATCAGTAGAATGAATACTACGCTTTTCCTTGGGACTACGGGAATTAGAGAAGTTGTTTCCTTTATTGTAGAGTGACGCTGAAGCAAGTAGAAGA CTAAGGTAACTCTCGTAGCTAATAGGATTACCTCCTTTGGCTAGGTCAAGAGTGGCTGTGATCTTCACTTGACAAAGTTCCGGTACATTGTGGACAGCATTCTCCAAAAGACTAAGACACAGTTGCTTTGGGAGTTGCTCAGCCATT GGTACAGTATTGTGGTAGATACAAAGGTGGTTCTTCCAATGAAGGATAAATCCTTCTGCTGTGCCTGTCCATGAGGATCCATATTTCGCCGTAGTTAGGTAACCAAGCGTGGTGGCTGAACTGATCTTCGCACTTGCTGATTCCGTATA GTGTTTGACAACTTTACAAAACACTTCTTGCGCAGTTCGCTCTAGCCTGGACAGAGAAGGGACAATCTTCGTCGTTAAGACTCGTGCGAATAGCAAAAGATCACAAAATAGCACATCGGCACCGACCAACGATTATTTCCAAGGAA AAAAAGAATGCTTCACTACAAGAAATTGTGTCATCCCTATACAGAGTCTTGTTACTGTGACAGAAAATTGATGGAAGATGTGGCGGATTGCCTTTACACTAGCCAACTTGTTCGACTAATTGCAGCTTCTTCTGAGAGGCTTCACCG AGTAACGCGAAGAACACCGGTGTCTCGTACATGCTCGTCGGTGAACGCTCGTCCAATGACACCCCCCACTTTGTATCAATATCCCAACTTGGTAGTGAACTGGAATGATACATGCAATTTCGCGCCGCATCAACAGCCACGGGCACC ATCGACGAATAGACTCGGTCGAGCTGGTTGCCCTCGCCGCTGGGCTGGCGGCCGTCTATGGCCCTGCAAACGCGCCAGAAACGCCGTCGAAGCCGTGTGCGAGACACCGCGGCCGGCCGCCGGCGTTGTGGATACCTCGCGGA AAACTTGGCCCTCACTGACAGATGAGGGGCGGACGTTGACACTTGAGGGGCCGACTCACCCGGCGCGGCGTTGACAGATGAGGGGCAGGCTCGATTTCGGCCGGCGACGTGGAGCTGGCCAGCCTCGCAAATCGGCGAAAA CGCCTGATTTTACGCGAGTTTCCCACAGATGATGTGGACAAGCCTGGGGATAAGTGCCCTGCGGTATTGACACTTGAGGGGCGCGACTACTGACAGATGAGGGGCGCGATCCTTGACACTTGAGGGGCAGAGTGCTGACAGATG AGGGGCGCACCTATTGACATTTGAGGGGCTGTCCACAGGCAGAAAATCCAGCATTTGCAAGGGTTTCCGCCCGTTTTTCGGCCACCGCTAACCTGTCTTTTAACCTGCTTTTAAACCAATATTTATAAACCTTGTTTTTAACCAGGG CTGCGCCCTGTGCGCGTGACCGCGCACGCCGAAGGGGGGTGCCCCCCCTTCTCGAACCCTCCCGGTCGAGTGAGCGAGGAAGCACCAGGGAACAGCACTTATATATTCTGCTTACACACGATGCCTGAAAAAACTTCCCTTGGG GTTATCCACTTATCCACGGGGATATTTTTATAATTATTTTTTTTATAGTTTTTAGATCTTCTTTTTTAGAGCGCCTTGTAGGCCTTTATCCATGCTGGTTCTAGAGAAGGTGTTGTGACAAATTGCCCTTTCAGTGTGACAAATCACCCTCA AATGACAGTCCTGTCTGTGACAAATTGCCCTTAACCCTGTGACAAATTGCCCTCAGAAGAAGCTGTTTTTTCACAAAGTTATCCCTGCTTATTGACTCTTTTTTATTTAGTGTGACAATCTAAAAACTTGTCACACTTCACATGGATCTG

	TCATGGCGGAAACAGCGGTTATCAATCACAAGAAACGTAAAAATAGCCCGCGAATCGTCCAGTCAAACGACCTCACTGAGGCGGCATATAGTCTCTCCCGGGATCAAAAACGTATGCTGTATCTGTTCGTTGACCAGATCAGAAAAT CTGATGGCACCCTACAGGAACATGACGGTATCTGCGAGATCCATGTTGCTAAATATGCTGAAATATTCGGATTGACCTCTGCGGAAGCCAGTAAGGATATACGGCAGGCATTGAAGAGTTTCGCGGGGAAGGAAGTGGTTTTTTAT CGCCCTGAAGAGGATGCCGGCGATGAAAAAGGCTATGAATCTTTTCCTTGGTTTATCAAACGTGCGCACAGTCCATCCAGAGGGCTTTACAGTGTACATATCAACCCATATCTCATTCCCTTCTTTATCGGGTTACAGAACCGGTTTA CGCAGTTTCGGCTTAGTGAAACAAAAGAAATCACCAATCCGTATGCCATGCGTTTATACGAATCCCTGTGTCAGTATCGTAAGCCGGATGGCTCAGGCATCGTCTCTCTGAAAATCGACTGGATCATAGAGCGTTACCAGCTGCCTCA AAGTTACCAGCGTATGCCTGACTTCCGCCGCCGCTTCCTGCAGGTCTGTGTTAATGAGATCAACAGCAGAACTCCAATGCGCCTCTCATACATTGAGAAAAAGAAAGGCCGCCAGACGACTCATATCGTATTTTCCTTCCGCGATATC ACTTCCATGACGACAGGATAGTCTGAGGGTTATCTGTCACAGATTTGAGGGTGGTTCGTCACATTTGTTCTGACCTACTGAGGGTAATTTGTCACAGTTTTGCTGTTTCCTTCAGCCTGCATGGATTTTCTCATACTTTTTGAACTGTA ATTTTTAAGGAAGCCAAATTTGAGGGCAGTTTGTCACAGTTGATTTCCTTCTCTTTCCCTTCGTCATGTGACCTGATATCGGGGGTTAGTTCGTCATCATTGATGAGGGTTGATTATCACAGTTTATTACTCTGAATTGGCTATCCGCGT GTGTACCTCTACCTGGAGTTTTTCCCACGGTGGATATTTCTTCTTGCGCTGAGCGTAAGAGCTATCTGACAGAACAGTTCTTCTTTGCTTCCTCGCCAGTTCGCTCGCTATGCTCGGTTACACGGCTGCGGCGAGCATCACGTGCTAT AAAAATAATTATAATTTAAATTTTTTAATATAAATATATAAATTAAAAATAGAAAGTAAAAAAAGAAATTAAAGAAAAAATAGTTTTTGTTTTCCGAAGATGTAAAAGACTCTAGGGGGATCGCCAACAAATACTACCTTTTACCTTGCT CTTCCTGCTCTCAGGTATTAATGCCGAATTGTTTCATCTTGTCTGTGTAGAAGACCACACACGAAAATCCTGTGATTTTACATTTTACTTATCGTTAATCGAATGTATATCTATTTAATCTGCTTTTCTTGTCTAATAAATATATATGTAAAGT ACGCTTTTTGTTGAAATTTTTTAAACCTTTGTTTATTTTTTTTTCTTCATTCCGTAACTCTTCTACCTTCTTTATTTACTTTCTAAAATCCAAATACAAAACATAAAAATAAATAAACACAGAGTAAATTCCCAAATTATTCCATCATTAAAA GATACGAGGCGCGTGTAAGTTACAGGCAAGCGATCCTAGTACACTCTATATTTTTTTATGCCTCGGTAATGATTTTCATTTTTTTTTTCCACCTAGCGGATGACTCTTTTTTTTTCTTAGCGATTGGCATTATCACATAATGAATTATACAT TATATAAAGTAATGTGATTTCTTCGAAGAATATACTAAAAAATGAGCAGGCAAGATAAACGAAGGCAAAGATGACAGAGCAGAAAGCCCTAGTAAAGCGTATTACAAATGAAACCAAGATTCAGATTGCGATCTCTTTAAAGGGTG GTCCCCTAGCGATAGAGCACTCGATCTTCCCAGAAAAAGAGGCAGAAGCAGTAGCAGAACAGGCCACACAATCGCAAGTGATTAACGTCCACACAGGTATAGGGTTTCTGGACCATATGATACATGCTCTGGCCAAGCATTCCGGC TGGTCGCTAATCGTTGAGTGCATTGGTGACTTACACATAGACGACCATCACACCACTGAAGACTGCGGGATTGCTCTCGGTCAAGCTTTTAAAGAGGCCCTAGGGGCCGTGCGTGGAGTAAAAAGGTTTGGATCAGGATTTGCGC CTTTGGATGAGGCACTTTCCAGAGCGGTGGTAGATCTTTCGAACAGGCCGTACGCAGTTGTCGAACTTGGTTTGCAAAGGGAGAAAGTAGGAGATCTCTCTTGCGAGATGATCCCGCATTTTCTTGAAAGCTTTGCAGAGGCTAG CAGAATTACCCTCCACGTTGATTGTCTGCGAGGCAAGAATGATCATCACCGTAGTGAGAGTGCGTTCAAGGCTCTTGCGGTTGCCATAAGAGAAGCCACCTCGCCCAATGGTACCAACGATGTTCCCTCCACCAAAGGTGTTCTTAT GTAGTTTTACACAGGAGTCTGGACTTGACGCTAGTGATAATAAGTGACTGAGGTATGTGCTCTTCTTATCTCCTTTTGTAGTGTTGCTCTTATTTTAAACAACTTTGCGGTTTTTTGATGACTTTGCGATTTTGTTGTTGCTTTGCAGTA AATTGCAAGATTTAATAAAAAAACGCAAAGCAATGATTAAAGGATGTTCAGAATGAAACTCATGGAAACACTTAACCAGTGCATAAACGCTGGTCATGAAATGACGAAGGCTATCGCCATTGCACAGTTTAATGATGACAGCCCGG AAGCGAGGAAAATAACCCGGCGCTGGAGAATAGGTGAAGCAGCGGATTTAGTTGGGGTTTCTTCTCAGGCTATCAGAGATGCCGAGAAAGCAGGGCGACTACCGCACCCGGATATGGAAATTCGAGGACGGGTTGAGCAACGT GTTGGTTATACAATTGAACAAATTAATCATATGCGTGATGTGTTTGGTACGCGATTGCGACGTGCTGAAGACGTATTTCCACCGGTGATCGGGGTTGCTGCCCATAAAGGTGGCGTTTACAAAACCTCAGTTTCTGTTCATCTTGCTC AGGATCTGGCTCTGAAGGGGCTACGTGTTTTGCTCGTGGAAGGTAACGACCCCCAGGGAACAGCCTCAATGTATCACGGATGGGTACCAGATCTTCATATTCATGCAGAAGACACTCTCCTGCCTTTCTATCTTGGGGAAAAGGAC GATGTCACTTATGCAATAAAGCCCACTTGCTGGCCGGGGCTTGACATTATTCCTTCCTGTCTGGCTCTGCACCGTATTGAAACTGAGTTAATGGGCAAATTTGATGAAGGTAAACTGCCCACCGATCCACACCTGATGCTCCGACTGG CCATTGAAACTGTTGCTCATGACTATGATGTCATAGTTATTGACAGCGCGCCTAACCTGGGTATCGGCACGATTAATGTCGTATGTGCTGCTGATGTGCTGATTGTTCCCACGCCTGCTGAGTTGTTTGACTACACCTCCGCACTGCAG TTTTTCGATATGCTTCGTGATCTGCTCAAGAACGTTGATCTTAAAGGGTTCGAGCCTGATGTACGTATTTTGCTTACCAAATACAGCAATAGCAATGGCTCTCAGTCCCCGTGGATGGAGGAGCAAATTCGGGATGCCTGGGGAAGC ATGGTTCTAAAAAATGTTGTACGTGAAACGGATGAAGTTGGTAAAGGTCAGATCCGGATGAGAACTGTTTTTGAACAGGCCATTGATCAACGCTCTTCAACTGGTGCCTGGAGAAATGCTCTTTCTATTTGGGAACCTGTCTGCAAT GAAATTTTCGATCGTCTGATTAAACCACGCTGGGAGATTAGATAATGAAGCGTGCGCCTGTTATTCCAAAACATACGCTCAATACTCAACCGGTTGAAGATACTTCGTTATCGACACCAGCTGCCCCGATGGTGGATTCGTTAATTGC GCGCGTAGGAGTAATGGCTCGCGGTAATGCCATTACTTTGCCTGTATGTGGTCGGGATGTGAAGTTTACTCTTGAAGTGCTCCGGGGTGATAGTGTTGAGAAGACCTCTCGGGTATGGTCAGGTAATGAACGTGACCAGGAGCTGC TTACTGAGGACGCACTGGATGATCTCATCCCTTCTTTTCTACTGACTGGTCAACAGACACCGGCGTTCGGTCGAAGAGTATCTGGTGTCATAGAAATTGCCGATGGGAGTCGCCGTCGTAAAGCTGCTGCACTTACCGAAAGTGATT ATCGTGTTCTGGTTGGCGAGCTGGATGATGAGCAGATGGCTGCATTATCCAGATTGGGTAACGATTATCGCCCAACAAGTGCTTATGAACGTGGTCAGCGTTATGCAAGCCGATTGCAGAATGAATTTGCTGGAAATATTTCTGCGC TGGCTGATGCGGAAAATATTTCACGTAAGATTATTACCCGCTGTATCAACACCGCCAAATTGCCTAAATCAGTTGTTGCTCTTTTTTCTCACCCCGGTGAACTATCTGCCCGGTCAGGTGATGCACTTCAAAAAGCCTTTACAGATAAA GAGGAATTACTTAAGCAGCAGGCATCTAACCTTCATGAGCAGAAAAAAGCTGGGGTGATATTTGAAGCTGAAGAAGTTATCACTCTTTTAACTTCTGTGCTTAAAACGTCATCTGCATCAAGAACTAGTTTAAGCTCACGACATCAG TTTGCTCCTGGAGCGACAGTATTGTATAAGGGCGATAAAATGGTGCTTAACCTGGACAGGTCTCGTGTTCCAACTGAGTGTATAGAGAAAATTGAGGCCATTCTTAAGGAACTTGAAAAGCCAGCACCCTGATGCGACCTCGTTTTA GTCTACGTTTATCTGTCTTTACTTAATGTCCTTTGTTACAGGCCAGAAAGCATAACTGGCCTGAATATTCTCTCTGGGCCCACTGTTCCACTTGTATCGTCGGTCTGATAATCAGACTGGGACCACGGTCCCACTCGTATCGTCGGTCTG ATTATTAGTCTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATAATCAGACTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGGACCATG GTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGAACCACGGTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGGACCACGGTCCCACTCGTATCGTCGGT CTGATTATTAGTCTGGGACCACGATCCCACTCGTGTTGTCGGTCTGATTATCGGTCTGGGACCACGGTCCCACTTGTATTGTCGATCAGACTATCAGCGTGAGACTACGATTCCATCAATGCCTGTCAAGGGCAAGTATTGACATGTC GTCGTAACCTGTAGAACGGAGTAACCTCGGTGTGCGGTTGTATGCCTGCTGTGGATTGCTGCTGTGTCCTGCTTATCCACAACATTTTGCGCACGGTTATGTGGACAAAATACCTGGTTACCCAGGCCGTGCCGGCACGTTAACCGG GCTGCATCCGATGCAAGTGTGTCGCTGTCGACGAGCTCGCGAGCTCGGACATGAGGTTGCCCCGTATTCAGTGTCGCTGATTTGTATTGTCTGAAGTTGTTTTTACGTTAAGTTGATGTAGATCAATTAATACGATACCTGCGTCATAA TTGATTATTTGACGTGGTTTGATGGCCTCCACGCACGTTGTGATATGTAGATGATAATCATTATCACTTTACGGGTCCTTTCCGGTGATCCGACAGGTTACGGGGCGGCGACCTCGCGGGTTTTCGCTATTTATGAAAATTTTCCGGTT TAAGGCGTTTCCGTTCTTCTTCGTCATAACTTAATGTTTTTATTTAAAATACCCTCTGAAAAGAAAGGAAACGACAGGTGCTGAAAGCGAGCTTTTTGGCCTCTGTCGTTTCCTTTCTCTGTTTTTGTCCGTGGAATGAACAATGGAA GTCCGAGCTCATCGCTAATAACTTCGTATAGCATACATTATACGAAGTTATATTCGATGCGGCCGCAAGGGGTTCGCGTCAGCGGGTGTTGGCGGGTGTCGGGGCTGGCTTAACTATGCGGCATCAGAGCAGATTGTACTGAGAGT

	GCACCATATGCGGTGTGAAATACCACACAGATGCGTAAGGAGAAAATACCGCATCAGGCGCCATTCGCCATTCAGCTGCGCAACTGTTGGGAAGGGCGATCGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGA TGTGCTGCAAGGCGATTAAGTTGGGTAACGCCAGGGTTTTCCCAGTCACGACGTTGTAAAACGACGGCCAGTGAATTGTAATACGACTCACTATAGGGCGAATTCGAGCTCGGTACCCGGGGATCCTCTAGAGTCGACCTGCAGG CATGCAAGCTTGAGTATTCTATAGTCTCACCTAAATAGCTTGGCGTAATCATGGTCATAGCTGTTTCCTGTGTGAAATTGTTATCCGCTCACAATTCCACACAACATACGAGCCGGAAGCATAAAGTGTAAAGCCTGGGGTGCCTAATG AGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGCGAACCCCTTGCGGCCGCCCGGGCCGTCGACCAATTCTCATGTTTGACAGCTTA TCATCGAATTTCTGCCATTCATCCGCTTATTATCACTTATTCAGGCGTAGCAACCAGGCGTTTAAGGGCACCAATAACTGCCTTAAAAAAATTACGCCCCGCCCTGCCACTCATCGCAGTACTGTTGTAATTCATTAAGCATTCTGCCGA CATGGAAGCCATCACAAACGGCATGATGAACCTGAATCGCCAGCGGCATCAGCACCTTGTCGCCTTGCGTATAATATTTGCCCATGGTGAAAACGGGGGCGAAGAAGTTGTCCATATTGGCCACGTTTAAATCAAAACTGGTGAAA CTCACCCAGGGATTGGCTGAGACGAAAAACATATTCTCAATAAACCCTTTAGGGAAATAGGCCAGGTTTTCACCGTAACACGCCACATCTTGCGAATATATGTGTAGAAACTGCCGGAAATCGTCGTGGTattcactccagagcgatgaaaa cgtttcagtttgctcatggaaaacggtgtaACAAGGGTGAACACTATCCCATATCACCAGCTCACCGTCTTTCATTGCCATACGAAATTCCGGATGAGCATTCATCAGGCGGGCAAGAATGTGAATAAAGGCCGGATAAAACTTGTGCTTATTTT TCTTTACGGTCTTTAAAAAGGCCGTAATATCCAGCTGAACGGTCTGGTTATAGGTACATTGAGCAACTGACTGAAATGCCTCAAAATGTTCTTTACGATGCCATTGGGATATATCAACGGTGGTATATCCAGTGATTTTTTTCTCCATTT TAGCTTCCTTAGCTCCTGAAAATCTCGATAACTCAAAAAATACGCCCGGTAGTGATCTTATTTCATTATGGTGAAAGTTGGAACCTCTTACGTGCCGATCAACGTCTCATTTTCGCCAAAAGTTGGCCCAGGGCTTCCCGGTATCAACA GGGACACCAGGATTTATTTATTCTGCGAAGTGATCTTCCGTCACAGGTATTTATTCGCGATAAGCTCATGGAGCGGCGTAACCGTCGCACAGGAAGGACAGAGAAAGCGCGGATCTGGGAAGTGACGGACAGAACGGTCAGGAC CTGGATTGGGGAGGCGGTTGCCGCCGCTGCTGCTGACGGTGTGACGTTCTCTGTTCCGGTCACACCACATACGTTCCGCCATTCCTATGCGATGCACATGCTGTATGCCGGTATACCGCTGAAAGTTCTGCAAAGCCTGATGGGAC ATAAGTCCATCAGTTCAACGGAAGTCTACACGAAGGTTTTTGCGCTGGATGTGGCTGCCCGGCACCGGGTGCAGTTTGCGATGCCGGAGTCTGATGCGGTTGCGATGCTGAAACAATTATCCTGAGAATAAATGCCTTGGCCTTTA TATGGAAATGTGGAACTGAGTGGATATGCTGTTTTTGTCTGTTAAACAGAGAAGCTGGCTGTTATCCACTGAGAAGCGAACGAAACAGTCGGGAAAATCTCCCATTATCGTAGAGATCCGCATTATTAATCTCAGGAGCCTGTGTAG CGTTTATAGGAAGTAGTGTTCTGTCATGATGCCTGCAAGCGGTAACGAAAACGATTTGAATATGCCTTCAGGAACAATAGAAATCTTCGTGCGGTGTTACGTTGAAGTGGAGCGGATTATGTCAGCAATGGACAGAACAACCTAATG AACACAGAACCATGATGTGGTCTGTCCTTTTACAGCCAGTAGTGCTCGCCGCAGTCGAGCGACAGGGCGAAGCCCAT
pTKS-3 sequencing	GAGCACAAGAGGTGACAAAAGCCACCGGCTGGATCGCACTTCTCGGAATTTCCCCCCTACTATCAAACAAATTCGAATTGCCAAAGGTGAAGGGACTAACTGTAAATCCTGATCAATCAAGGTCTCAATCAAGTACAATGGGCTAC AATGATATTTAGATGGGAACACAATGAAACGAATTGAAACTTCTACTGACAGGAGCGCAATTGACTTGTGTAGCTTTTCATGAGCACTTGATTGCTACCGATTGTGAACGGGATGGGGAAAGACTCGAAAAGGTGCATGCTTCCGA TAATCTACTATATTTTCTAGAATCAAATAATATTTAAATGAATGAGGTCCTCAGCGTACGTTAAGCCTACTTATTTAGAACGAGAAGTCAGACCGAGGGGTACTAAAATTCTAAGGGTTGAGAGGTATCTTGATTCCGGGTCTATGGAA GCCCATCCTTGTTGAAGCTTGAACACGATCCTTGTGAAAGGCCGACGTTGCGCGAAAAAACAGCCTGCCGATTTCTTTCCTTCTTTCTCGTCTCAACCTATATACTTTCATAATCTCTGTTAGAGTTTACCAACAACACATATATACATT TCGACAAAATGGCCAAGTTGACCAGTGCCGTTCCGGTGCTCACCGCGCGCGACGTCGCCGGAGCGGTCGAGTTCTGGACCGACCGGCTCGGGTTCTCCCGGGACTTCGTGGAGGACGACTTCGCCGGTGTGGTCCGGGACGAC GTGACCCTGTTCATCAGCGCGGTCCAGGACCAGGTGGTGCCGGACAACACCCTGGCCTGGGTGTGGGTGCGCGGCCTGGACGAGCTGTACGCCGAGTGGTCGGAGGTCGTGTCCACGAACTTCCGGGACGCCTCCGGGCCGG CCATGACCGAGATCGGCGAGCAGCCGTGGGGGCGGGAGTTCGCCCTGCGCGACCCGGCCGGCAACTGCGTGCACTTCGTGGCCGAGGAGCAGGACTGATTTTGTTACATTGACTTCAAGGAGTCGAGGAATCGATACTGCCGT CGTTTCCAGGATCCGAGGTTTCTATAGACTCTCTATAGACTCTGTTAACCTAATAGAATCAGACATACCTCTCCTGCTATTTTGTTTTTTATGAATTTGGCTTTTGCCTCTCTAGTCAGATTTGAATGTTATTTTCCGCCAGGTGTGTTAGT CGGGCTCTCGTTTGAGTTACAAGAGGGATTGAGTGGCGAGGATTCACTCTAATGTAAATATGACTGTGAACAAAACTTTAAAATTACTACGCATCTTCTTTGACTGTCAGATATTCGTCGGTGACAGCAGTCAATGCCTGCAAATTGT CCTCCTGGGTCGCAATTTGGTTTTGGATTGACCTGGTATGCATTATGAAGAAAAAAATTCGTTATTAGCCAACTGCCTAGCGTGCACATTGCATGGTTAGACCTCCTTGACGACTGTGAGCCTACATCCTTCTGCAACAAGCTGCAAT CCCTGCGATAGACCTTTTCCAAACTCACGCAGTCCAAGAAAACAAAGGGGTGAGAAGTATACGCACCTTTCGGTTTCGGCATAATTCTTAAACTCTTGTGGTCACTTTCTTGTGAAGAAGCTAGGGGCACTCGTTTTCCCTCAGAG CCTGCAAACACAAAATTCCTGCAGTCAATTGTCCCAACACTCGGCAAGCCGTATGCGCAAGCAACGATGCGCAGAAGGCCGTGGATGGATGGCGACTCGCGATATGGCTTCTTGGGTCGCCAGTGTGGTATGTCCGGCGTATGTC AATACGCGAATTCGGACGACTGGCATCTCTAGGAGGAGGATTCCTTCTTTTATGACATGTTTATTTTATATACATTGATGCTTTCCGACAGTCGGAAGTAATAAATGAATTTATTTCAAGACTACCTATACTCCTTTGACTTGTTCGACTA ATCTTACCGCTTACTAAAATCTCGAAATCACGCTTGACCTCTCGCACGCAAATTTTTGCTGCTGGACGCTACGCACTCGGCCCAATTCTTCTCGGTCCTCGTCGTCGCAATTGTCGTTGCGTTGATCTTGCACCGAAGGAATCAGAGA ATAGAATACCATGAACCACCTGCGTGCCGAAGGACCCGCCTCCGTCCTCGCCATTGGAACCGCCAACCCCGAAAACATTCTCCTCCAAGACGAATTCCCTGACTACTACTTCCGCGTGACTAAGAGTGAGCACATGACGCAATTGA AAGAAAAGTTCCGTAAGATCTGTGATAAGTCCATGATCCGTAAGCGTAACTGTTTCCTGAATGAGGAACACCTTAAGCAGAACCCCCGCTTGGTCGAACATGAAATGCAGACCTTGGATGCCCGCCAGGACATGCTCGTCGTTGAA GTCCCTAAGTTGGGTAAAGACGCTTGCGCCAAGGCCATTAAGGAATGGGGACAGCCCAAGAGTAAGATCACCCATTTGATTTTCACATCCGCCTCTACGACCGATATGCCTGGAGCCGATTACCACTGCGCCAAGCTTCTGGGACT GTCCCCCTCCGTTAAGCGCGTCATGATGTACCAGCTTGGATGTTACGGAGGTGGCACCGTCCTCCGTATTGCCAAGGACATTGCCGAAAACAACAAGGGTGCCCGTGTCCTCGCCGTCTGCTGCGACATCATGGCCTGCCTCTTCC GCGGACCCTCCGAATCCGACTTGGAACTCCTCGTGGGACAGGCCATTTTTGGTGACGGCGCCGCCGCCGTCATTGTCGGAGCTGAACCCGACGAATCCGTCGGAGAAAGGCCCATTTTTGAATTGGTCTCCACCGGACAGACCAT TCTCCCGAACTCCGAAGGAACCATCGGCGGACACATTCGTGAAGCCGGTCTCATCTTTGACTTGCACAAGGACGTTCCCATGCTCATTTCCAACAACATTGAAAAGTGCCTCATTGAAGCCTTCACCCCCATTGGAATCTCCGACTG GAATAGTATCTTTTGGATTACCCACCCCGGAGGAAAGGCCATCTTGGATAAGGTGGAAGAAAAGCTCCACCTCAAGTCCGACAAGTTCGTCGACTCCCGTCACGTCTTGTCCGAACACGGAAAACATGTCGTCCTCCACCGTCCTCT TTGTCATGGATGAATTGCGTAAGCGCTCGCTCGAAGAAGGAAAGTCCACCACCGGCGATGGTTTCGAATGGGGCGTTCTCTTCGGATTTGGACCCGGTCTCACCGTCGAACGTGTCGTCGTCCGTTCTGTCCCGATTAAGTACCAC CATCACCACCACCACTAAAAATTTAATTTTCATTAGTTGCAGTCACTCCGCTTTGGTTTCAGGGTAATATAGATCTTCCGCTGCATAACCCTGCTTCGGGGTCATTATAGCGATTTTTTCGGTATATCCATCCTTTTTCGCACGATATACAG GATTTTGCCAAAGGGTTCGTGTAGACTTTCCTTGGTGTATCCAACGGCGTCAGCCGGGCAGGATAGGTGAAGTAGGCCCACCCGCGAGCGGGTGTTCCTTCTTCACTGTCCCTTATTCGCACCTGGCGGTGCTCAACGGGAATCCT GCTCTGCGAGGCTGGCCGGCTACCGCCGGCGTAACAGATGAGGGCAAGCGGATGGCTGATGAAACCAAGCCAACCAGGAAGGGCAGCCCACCTATCAAGGTGTACTGCCTTCCAGACGAACGAAGAGCGATTGAGGAAAAGG CGGCGGCGGCCGGCATGAGCCTGTCGGCCTACCTGCTGGCCGTCGGCCAGGGCTACAAAATCACGGGCGTCGTGGACTATGAGCACGTCCGCGAGCTGGCCCGCATCAATGGCGACCTGGGCCGCCTGGGCGGCCTGCTGAAA

	CTCTGGCTCACCGACGACCCGCGCACGGCGCGGTTCGGTGATGCCACGATCCTCGCCCTGCTGGCGAAGATCGAAGAGAAGCAGGACGAGCTTGGCAAGGTCATGATGGGCGTGGTCCGCCCGAGGGCAGAGCCATGACTTTT TTAGCCGCTAAAACGGCCGGGGGGTGCGCGTGATTGCCAAGCACGTCCCCATGCGCTCCATCAAGAAGAGGCACTTCGAGCTGTAAGTACATCACCGACGAGCAAGGCAAGACGATCCGCGCCTGTTTTATTGAGAACGTTGTT CGTGTTGGCCTCAATGGTAGCGATGCGTCATTCAGCGAAGTTCTGGTGCTGATGATGTGGTTCGCTTTGCCACTGGTCAATGTGGTAAGCCCGTGTAATGTCAGTAACCTTTTTACTGATCTCAGCTTGAGCACGGTCGCTGATGAG CTTATCCATGGCCCCACGGTAACGGATATGATCCTCTAGGGCGTTGACAAATTCTTTGTCGGTTTTCATGGGGTAGACGTCAGTGACCAGGGAACGTCTCCCTACAAAAAGTTGCGCATACTTTGCTCCGTTGTCGACGGCAGGGGT GTCGGACCAGATTGTATCTGTGGCAACGGCCTCATTGCGTCAATGGACCTTTAAAGCCGGGAAACGAGACTTGAAATGTTTACGTAGAGGTGCATTATAGACCTCACGCGCATATTGAGTGGTTGCAAAAATGGTTTTGCGAACGG TATCACTGGAGACCCATGCCAGGCAAGGACGGAGGGCATCATAATCATGTTCATTGCGTTGGACAGCATGCTTGTTACACGTAAGTATACGGTCGAGAGCATCGTGACGTTGAGAATTACAGATGGCAACGTGTCGGTGCATGTATT GGCCGAGATTGTCAAATCGTGGCTCAATATATGGCATGCCAGGTAAGTCATGGATGTCGGTATGCCATTCAGCCTTCATGTCGATTTCGTTGTCGAGAACTGATGGGTCCCAGTCAACGTCAGAAGTAAGAACAACATGGGGAAGG GAATGAAGTTCATGACTGGTGGGTGCGCGCATATCCATGTACGGAAGACCCTGTCGTATGTTTAGTGGGATGATGTAATCATCCAGGGTAACAATACGTTGGTTGCCGCCCACGGTACGAGACCGATCTTGAACACAATTGTGGCAA TGTTCAAGTTGGGCGCTGGAATGGATGGTTTTACCTTTACCAAGATGCGCGTATTGATGCATGATAACAACAATGGGCCCTCGTTGCGATTCGACAAGACCGGCAGCCGTGACAATGTCTAGATTGGACAAGGTATGTTCATTTATA CCGGTTATGTTGGCTGAACGTCCAGTTTTGTGCAGTACGGTAACATCACTCCCCGCAAGTCCACCGTTGGCACCGCGATCGACAAGTGCAGATGTGGTATTTTGTACTGTGTGTCGGGAGACTTGGTACTGTAACACATTTGACTGA AGTGACTTGGTGGTACCATGAGGACGGAGGGAACCCGTTGATACGGTGTTGCGTGACGCTGCAAGTACCTTACGTATGTCGCCTGGATCCATACGTCCAACCCGATCAGAAAGATGTGCTAGGAGTTCCGTTTCTGGTGCACAATC ATGAAAGGTATCCACGGGAGTTCCATTGTTGTCGTCCGGGGCTGCGTCGCGACTGCCAGTTGCATGTACATGCGCCATCAAGGGACGTGCCAATCCATTACTAACCGGGAGAACCTTAGCTGGGGCAGCCAATCCCTGAAGTATAG CCTTAGCATCATCTGAGAGCTGGTTCCACATATCTCTAGGGATATAAGGTCGTTCACGGTTAGTGGGCGTACTATGATGTCGGTTATTAGTACAATTCTCCCTGCGGGCATGCGCATTGGCTTCATAGAGTACGGAAGGTGACAAGTC AATATTGTAGTTAACATCCGGATCAGTGTCAAAGTCTGTAGGATGGTAAGAAAGATCAGTAGAATGAATACTACGCTTTTCCTTGGGACTACGGGAATTAGAGAAGTTGTTTCCTTTATTGTAGAGTGACGCTGAAGCAAGTAGAAG ACTAAGGTAACTCTCGTAGCTAATAGGATTACCTCCTTTGGCTAGGTCAAGAGTGGCTGTGATCTTCACTTGACAAAGTTCCGGTACATTGTGGACAGCATTCTCCAAAAGACTAAGACACAGTTGCTTTGGGAGTTGCTCAGCCAT TGGTACAGTATTGTGGTAGATACAAAGGTGGTTCTTCCAATGAAGGATAAATCCTTCTGCTGTGCCTGTCCATGAGGATCCATATTTCGCCGTAGTTAGGTAACCAAGCGTGGTGGCTGAACTGATCTTCGCACTTGCTGATTCCGTAT AGTGTTTGACAACTTTACAAAACACTTCTTGCGCAGTTCGCTCTAGCCTGGACAGAGAAGGGACAATCTTCGTCGTTAAGACTCGTGCGAATAGCAAAAGATCACAAAATAGCACATCGGCACCGACCAACGATTATTTCCAAGGA AAAAAAGAATGCTTCACTACAAGAAATTGTGTCATCCCTATACAGAGTCTTGTTACTGTGACAGAAAATTGATGGAAGATGTGGCGGATTGCCTTTACACTAGCCAACTTGTTCGACTAATTGCAGCTTCTTCTGAGAGGCTTCACC GAGTAACGCGAAGAACACCGGTGTCTCGTACATGCTCGTCGGTGAACGCTCGTCCAATGACACCCCCCACTTTGTATCAATATCCCAACTTGGTAGTGAACTGGAATGATACATGCAATTTCGCGCCGCATCAACAGCCACGGGCAC CATCGACGAATAGACTCGGTCGAGCTGGTTGCCCTCGCCGCTGGGCTGGCGGCCGTCTATGGCCCTGCAAACGCGCCAGAAACGCCGTCGAAGCCGTGTGCGAGACACCGCGGCCGGCCGCCGGCGTTGTGGATACCTCGCGG AAAACTTGGCCCTCACTGACAGATGAGGGGCGGACGTTGACACTTGAGGGGCCGACTCACCCGGCGCGGCGTTGACAGATGAGGGGCAGGCTCGATTTCGGCCGGCGACGTGGAGCTGGCCAGCCTCGCAAATCGGCGAAA ACGCCTGATTTTACGCGAGTTTCCCACAGATGATGTGGACAAGCCTGGGGATAAGTGCCCTGCGGTATTGACACTTGAGGGGCGCGACTACTGACAGATGAGGGGCGCGATCCTTGACACTTGAGGGGCAGAGTGCTGACAGAT GAGGGGCGCACCTATTGACATTTGAGGGGCTGTCCACAGGCAGAAAATCCAGCATTTGCAAGGGTTTCCGCCCGTTTTTCGGCCACCGCTAACCTGTCTTTTAACCTGCTTTTAAACCAATATTTATAAACCTTGTTTTTAACCAGG GCTGCGCCCTGTGCGCGTGACCGCGCACGCCGAAGGGGGGTGCCCCCCCTTCTCGAACCCTCCCGGTCGAGTGAGCGAGGAAGCACCAGGGAACAGCACTTATATATTCTGCTTACACACGATGCCTGAAAAAACTTCCCTTGG GGTTATCCACTTATCCACGGGGATATTTTTATAATTATTTTTTTTATAGTTTTTAGATCTTCTTTTTTAGAGCGCCTTGTAGGCCTTTATCCATGCTGGTTCTAGAGAAGGTGTTGTGACAAATTGCCCTTTCAGTGTGACAAATCACCCT CAAATGACAGTCCTGTCTGTGACAAATTGCCCTTAACCCTGTGACAAATTGCCCTCAGAAGAAGCTGTTTTTTTCACAAAGTTATCCCTGCTTATTGACTCTTTTTTATTTAGTGTGACAATCTAAAAACTTGTCACACTTCACATGGAT CTGTCATGGCGGAAACAGCGGTTATCAATCACAAGAAACGTAAAAATAGCCCGCGAATCGTCCAGTCAAACGACCTCACTGAGGCGGCATATAGTCTCTCCCGGGATCAAAAACGTATGCTGTATCTGTTCGTTGACCAGATCAGAA AATCTGATGGCACCCTACAGGAACATGACGGTATCTGCGAGATCCATGTTGCTAAATATGCTGAAATATTCGGATTGACCTCTGCGGAAGCCAGTAAGGATATACGGCAGGCATTGAAGAGTTTCGCGGGGAAGGAAGTGGTTTTT TATCGCCCTGAAGAGGATGCCGGCGATGAAAAAGGCTATGAATCTTTTCCTTGGTTTATCAAACGTGCGCACAGTCCATCCAGAGGGCTTTACAGTGTACATATCAACCCATATCTCATTCCCTTCTTTATCGGGTTACAGAACCGGTT TACGCAGTTTCGGCTTAGTGAAACAAAAGAAATCACCAATCCGTATGCCATGCGTTTATACGAATCCCTGTGTCAGTATCGTAAGCCGGATGGCTCAGGCATCGTCTCTCTGAAAATCGACTGGATCATAGAGCGTTACCAGCTGCCT CAAAGTTACCAGCGTATGCCTGACTTCCGCCGCCGCTTCCTGCAGGTCTGTGTTAATGAGATCAACAGCAGAACTCCAATGCGCCTCTCATACATTGAGAAAAAGAAAGGCCGCCAGACGACTCATATCGTATTTTCCTTCCGCGAT ATCACTTCCATGACGACAGGATAGTCTGAGGGTTATCTGTCACAGATTTGAGGGTGGTTCGTCACATTTGTTCTGACCTACTGAGGGTAATTTGTCACAGTTTTGCTGTTTCCTTCAGCCTGCATGGATTTTCTCATACTTTTTGAACT GTAATTTTTAAGGAAGCCAAATTTGAGGGCAGTTTGTCACAGTTGATTTCCTTCTCTTTCCCTTCGTCATGTGACCTGATATCGGGGGTTAGTTCGTCATCATTGATGAGGGTTGATTATCACAGTTTATTACTCTGAATTGGCTATCCG CGTGTGTACCTCTACCTGGAGTTTTTCCCACGGTGGATATTTCTTCTTGCGCTGAGCGTAAGAGCTATCTGACAGAACAGTTCTTCTTTGCTTCCTCGCCAGTTCGCTCGCTATGCTCGGTTACACGGCTGCGGCGAGCATCACGTGC TATAAAAATAATTATAATTTAAATTTTTTAATATAAATATATAAATTAAAAATAGAAAGTAAAAAAAGAAATTAAAGAAAAAATAGTTTTTGTTTTCCGAAGATGTAAAAGACTCTAGGGGGATCGCCAACAAATACTACCTTTTACCTTG CTCTTCCTGCTCTCAGGTATTAATGCCGAATTGTTTCATCTTGTCTGTGTAGAAGACCACACACGAAAATCCTGTGATTTTACATTTTACTTATCGTTAATCGAATGTATATCTATTTAATCTGCTTTTCTTGTCTAATAAATATATATGTAAA GTACGCTTTTTGTTGAAATTTTTTAAACCTTTGTTTATTTTTTTTTCTTCATTCCGTAACTCTTCTACCTTCTTTATTTACTTTCTAAAATCCAAATACAAAACATAAAAATAAATAAACACAGAGTAAATTCCCAAATTATTCCATCATTAAA AGATACGAGGCGCGTGTAAGTTACAGGCAAGCGATCCTAGTACACTCTATATTTTTTTATGCCTCGGTAATGATTTTCATTTTTTTTTTCCACCTAGCGGATGACTCTTTTTTTTTCTTAGCGATTGGCATTATCACATAATGAATTATACA TTATATAAAGTAATGTGATTTCTTCGAAGAATATACTAAAAAATGAGCAGGCAAGATAAACGAAGGCAAAGATGACAGAGCAGAAAGCCCTAGTAAAGCGTATTACAAATGAAACCAAGATTCAGATTGCGATCTCTTTAAAGGGTG GTCCCCTAGCGATAGAGCACTCGATCTTCCCAGAAAAAGAGGCAGAAGCAGTAGCAGAACAGGCCACACAATCGCAAGTGATTAACGTCCACACAGGTATAGGGTTTCTGGACCATATGATACATGCTCTGGCCAAGCATTCCGGC TGGTCGCTAATCGTTGAGTGCATTGGTGACTTACACATAGACGACCATCACACCACTGAAGACTGCGGGATTGCTCTCGGTCAAGCTTTTAAAGAGGCCCTAGGGGCCGTGCGTGGAGTAAAAAGGTTTGGATCAGGATTTGCGC CTTTGGATGAGGCACTTTCCAGAGCGGTGGTAGATCTTTCGAACAGGCCGTACGCAGTTGTCGAACTTGGTTTGCAAAGGGAGAAAGTAGGAGATCTCTCTTGCGAGATGATCCCGCATTTTCTTGAAAGCTTTGCAGAGGCTAG

	CAGAATTACCCTCCACGTTGATTGTCTGCGAGGCAAGAATGATCATCACCGTAGTGAGAGTGCGTTCAAGGCTCTTGCGGTTGCCATAAGAGAAGCCACCTCGCCCAATGGTACCAACGATGTTCCCTCCACCAAAGGTGTTCTTAT GTAGTTTTACACAGGAGTCTGGACTTGACGCTAGTGATAATAAGTGACTGAGGTATGTGCTCTTCTTATCTCCTTTTGTAGTGTTGCTCTTATTTTAAACAACTTTGCGGTTTTTTGATGACTTTGCGATTTTGTTGTTGCTTTGCAGTA AATTGCAAGATTTAATAAAAAAACGCAAAGCAATGATTAAAGGATGTTCAGAATGAAACTCATGGAAACACTTAACCAGTGCATAAACGCTGGTCATGAAATGACGAAGGCTATCGCCATTGCACAGTTTAATGATGACAGCCCGG AAGCGAGGAAAATAACCCGGCGCTGGAGAATAGGTGAAGCAGCGGATTTAGTTGGGGTTTCTTCTCAGGCTATCAGAGATGCCGAGAAAGCAGGGCGACTACCGCACCCGGATATGGAAATTCGAGGACGGGTTGAGCAACGT GTTGGTTATACAATTGAACAAATTAATCATATGCGTGATGTGTTTGGTACGCGATTGCGACGTGCTGAAGACGTATTTCCACCGGTGATCGGGGTTGCTGCCCATAAAGGTGGCGTTTACAAAACCTCAGTTTCTGTTCATCTTGCTC AGGATCTGGCTCTGAAGGGGCTACGTGTTTTGCTCGTGGAAGGTAACGACCCCCAGGGAACAGCCTCAATGTATCACGGATGGGTACCAGATCTTCATATTCATGCAGAAGACACTCTCCTGCCTTTCTATCTTGGGGAAAAGGAC GATGTCACTTATGCAATAAAGCCCACTTGCTGGCCGGGGCTTGACATTATTCCTTCCTGTCTGGCTCTGCACCGTATTGAAACTGAGTTAATGGGCAAATTTGATGAAGGTAAACTGCCCACCGATCCACACCTGATGCTCCGACTGG CCATTGAAACTGTTGCTCATGACTATGATGTCATAGTTATTGACAGCGCGCCTAACCTGGGTATCGGCACGATTAATGTCGTATGTGCTGCTGATGTGCTGATTGTTCCCACGCCTGCTGAGTTGTTTGACTACACCTCCGCACTGCAG TTTTTCGATATGCTTCGTGATCTGCTCAAGAACGTTGATCTTAAAGGGTTCGAGCCTGATGTACGTATTTTGCTTACCAAATACAGCAATAGCAATGGCTCTCAGTCCCCGTGGATGGAGGAGCAAATTCGGGATGCCTGGGGAAGC ATGGTTCTAAAAAATGTTGTACGTGAAACGGATGAAGTTGGTAAAGGTCAGATCCGGATGAGAACTGTTTTTGAACAGGCCATTGATCAACGCTCTTCAACTGGTGCCTGGAGAAATGCTCTTTCTATTTGGGAACCTGTCTGCAAT GAAATTTTCGATCGTCTGATTAAACCACGCTGGGAGATTAGATAATGAAGCGTGCGCCTGTTATTCCAAAACATACGCTCAATACTCAACCGGTTGAAGATACTTCGTTATCGACACCAGCTGCCCCGATGGTGGATTCGTTAATTGC GCGCGTAGGAGTAATGGCTCGCGGTAATGCCATTACTTTGCCTGTATGTGGTCGGGATGTGAAGTTTACTCTTGAAGTGCTCCGGGGTGATAGTGTTGAGAAGACCTCTCGGGTATGGTCAGGTAATGAACGTGACCAGGAGCTGC TTACTGAGGACGCACTGGATGATCTCATCCCTTCTTTTCTACTGACTGGTCAACAGACACCGGCGTTCGGTCGAAGAGTATCTGGTGTCATAGAAATTGCCGATGGGAGTCGCCGTCGTAAAGCTGCTGCACTTACCGAAAGTGATT ATCGTGTTCTGGTTGGCGAGCTGGATGATGAGCAGATGGCTGCATTATCCAGATTGGGTAACGATTATCGCCCAACAAGTGCTTATGAACGTGGTCAGCGTTATGCAAGCCGATTGCAGAATGAATTTGCTGGAAATATTTCTGCGC TGGCTGATGCGGAAAATATTTCACGTAAGATTATTACCCGCTGTATCAACACCGCCAAATTGCCTAAATCAGTTGTTGCTCTTTTTTCTCACCCCGGTGAACTATCTGCCCGGTCAGGTGATGCACTTCAAAAAGCCTTTACAGATAAA GAGGAATTACTTAAGCAGCAGGCATCTAACCTTCATGAGCAGAAAAAAGCTGGGGTGATATTTGAAGCTGAAGAAGTTATCACTCTTTTAACTTCTGTGCTTAAAACGTCATCTGCATCAAGAACTAGTTTAAGCTCACGACATCAG TTTGCTCCTGGAGCGACAGTATTGTATAAGGGCGATAAAATGGTGCTTAACCTGGACAGGTCTCGTGTTCCAACTGAGTGTATAGAGAAAATTGAGGCCATTCTTAAGGAACTTGAAAAGCCAGCACCCTGATGCGACCTCGTTTTA GTCTACGTTTATCTGTCTTTACTTAATGTCCTTTGTTACAGGCCAGAAAGCATAACTGGCCTGAATATTCTCTCTGGGCCCACTGTTCCACTTGTATCGTCGGTCTGATAATCAGACTGGGACCACGGTCCCACTCGTATCGTCGGTCTG ATTATTAGTCTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATAATCAGACTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGGACCATG GTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGGACCACGGTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGAACCACGGTCCCACTCGTATCGTCGGTCTGATTATTAGTCTGGGACCACGGTCCCACTCGTATCGTCGGT CTGATTATTAGTCTGGGACCACGATCCCACTCGTGTTGTCGGTCTGATTATCGGTCTGGGACCACGGTCCCACTTGTATTGTCGATCAGACTATCAGCGTGAGACTACGATTCCATCAATGCCTGTCAAGGGCAAGTATTGACATGTC GTCGTAACCTGTAGAACGGAGTAACCTCGGTGTGCGGTTGTATGCCTGCTGTGGATTGCTGCTGTGTCCTGCTTATCCACAACATTTTGCGCACGGTTATGTGGACAAAATACCTGGTTACCCAGGCCGTGCCGGCACGTTAACCGG GCTGCATCCGATGCAAGTGTGTCGCTGTCGACGAGCTCGCGAGCTCGGACATGAGGTTGCCCCGTATTCAGTGTCGCTGATTTGTATTGTCTGAAGTTGTTTTTACGTTAAGTTGATGTAGATCAATTAATACGATACCTGCGTCATAA TTGATTATTTGACGTGGTTTGATGGCCTCCACGCACGTTGTGATATGTAGATGATAATCATTATCACTTTACGGGTCCTTTCCGGTGATCCGACAGGTTACGGGGCGGCGACCTCGCGGGTTTTCGCTATTTATGAAAATTTTCCGGTT TAAGGCGTTTCCGTTCTTCTTCGTCATAACTTAATGTTTTTATTTAAAATACCCTCTGAAAAGAAAGGAAACGACAGGTGCTGAAAGCGAGCTTTTTGGCCTCTGTCGTTTCCTTTCTCTGTTTTTGTCCGTGGAATGAACAATGGAA GTCCGAGCTCATCGCTAATAACTTCGTATAGCATACATTATACGAAGTTATATTCGATGCGGCCGCAAGGGGTTCGCGTCAGCGGGTGTTGGCGGGTGTCGGGGCTGGCTTAACTATGCGGCATCAGAGCAGATTGTACTGAGAGT GCACCATATGCGGTGTGAAATACCACACAGATGCGTAAGGAGAAAATACCGCATCAGGCGCCATTCGCCATTCAGCTGCGCAACTGTTGGGAAGGGCGATCGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGA TGTGCTGCAAGGCGATTAAGTTGGGTAACGCCAGGGTTTTCCCAGTCACGACGTTGTAAAACGACGGCCAGTGAATTGTAATACGACTCACTATAGGGCGAATTCGAGCTCGGTACCCGGGGATCCTCTAGAGTCGACCTGCAGG CATGCAAGCTTGAGTATTCTATAGTCTCACCTAAATAGCTTGGCGTAATCATGGTCATAGCTGTTTCCTGTGTGAAATTGTTATCCGCTCACAATTCCACACAACATACGAGCCGGAAGCATAAAGTGTAAAGCCTGGGGTGCCTAATG AGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGCGAACCCCTTGCGGCCGCCCGGGCCGTCGACCAATTCTCATGTTTGACAGCTTA 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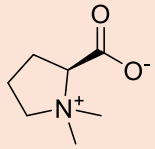
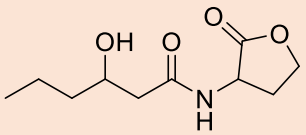
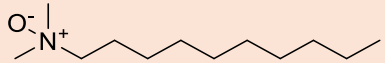
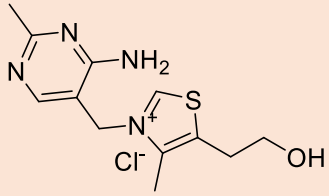
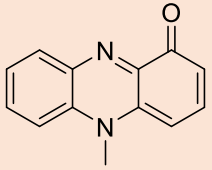
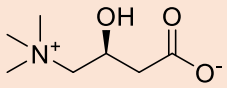
GGGACACCAGGATTTATTTATTCTGCGAAGTGATCTTCCGTCACAGGTATTTATTCGCGATAAGCTCATGGAGCGGCGTAACCGTCGCACAGGAAGGACAGAGAAAGCGCGGATCTGGGAAGTGACGGACAGAACGGTCAGGAC CTGGATTGGGGAGGCGGTTGCCGCCGCTGCTGCTGACGGTGTGACGTTCTCTGTTCCGGTCACACCACATACGTTCCGCCATTCCTATGCGATGCACATGCTGTATGCCGGTATACCGCTGAAAGTTCTGCAAAGCCTGATGGGAC ATAAGTCCATCAGTTCAACGGAAGTCTACACGAAGGTTTTTGCGCTGGATGTGGCTGCCCGGCACCGGGTGCAGTTTGCGATGCCGGAGTCTGATGCGGTTGCGATGCTGAAACAATTATCCTGAGAATAAATGCCTTGGCCTTTA TATGGAAATGTGGAACTGAGTGGATATGCTGTTTTTGTCTGTTAAACAGAGAAGCTGGCTGTTATCCACTGAGAAGCGAACGAAACAGTCGGGAAAATCTCCCATTATCGTAGAGATCCGCATTATTAATCTCAGGAGCCTGTGTAG CGTTTATAGGAAGTAGTGTTCTGTCATGATGCCTGCAAGCGGTAACGAAAACGATTTGAATATGCCTTCAGGAACAATAGAAATCTTCGTGCGGTGTTACGTTGAAGTGGAGCGGATTATGTCAGCAATGGACAGAACAACCTAATG AACACAGAACCATGATGTGGTCTGTCCTTTTACAGCCAGTAGTGCTCGCCGCAGTCGAGCGACAGGGCGAAGCCCAT

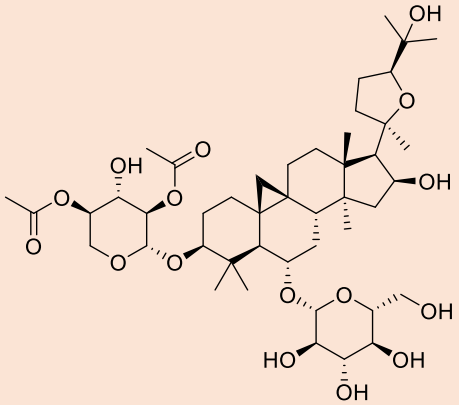
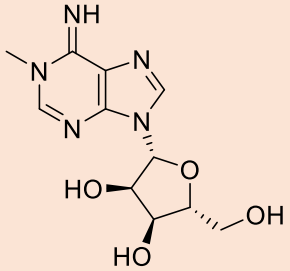
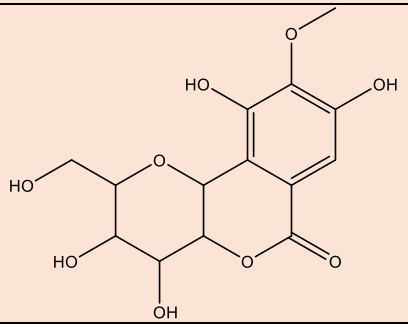
pOAC-5 sequencing Forward	GGCCANNGCCNTGTTTGTCGCGTGCTATGTCTTTTTAGGTACTTTGAACCTACGTTCGTACTTGTATAATATGATCATCGTATTATCGTTTTTCATCCGTCCAGCGCAAAATGCATTAGCAGCTAGTCCTAGCGTGCGGAGCTACCTGGA CAGGTGCATGACGGATGCGTGTCCTTCAGTGACTTTCTAATTAACAGTAACTTCTTTACTTATGTTTCAGTTTGTAAGAAGCGGGATTCGCTCGTCGGTTGACATCTGATTGGACTGCGTCGGCACATGAAAACTACATTGTGAAATC TGCTAAAACTCCGGGTATCTCTGACACAAAACGATTCGGCTTCGCAATTTCAACATTACGGTCAAGGCTAACGTATCTTTCTCGGTCAACTTCAGATTATGCCGATTAAATTGTCGTAGCTTTCAAGGCGTTTTGAGTACTGCGGCAG TTGTTGAACCTGCAAGGAGAAGATCTCGACAACAGAATAAAGCGAAAAATGGGTCTCATGCACTAACACTCAGGCCTCCCTCATAATCTCTGTTTGAGTTTACCAACAACACATATATACATTTCGACAAAATGGCCGTCAAGCACTT GATCGTTCTCAAGTTCAAGGACGAAATCACCGAAGCCCAGAAGGAAGAATTCTTCAAGACCTACGTCAACCTCGTCAACATCATTCCCGCCATGAAGGATGTTTACTGGGGGAAAGGACGTCACCCAGAAGAACAAGGAAGAAG GTTACACCCACATCGTCGAAGTCACCTTTGAATCCGTTGAAACCATCCAGACTACATTATCCACCCNGCCCACGTNGGCTTCGNAGACGTCTACCGTTCTTTTGGNAAAGTGTTGATTTTCGACTACACCCCCCCGTAANGANANA GTGANTNNGAGAGNNNNNNNTAATTTGGTTANNNCNCNN
pOAC-5 sequencing Reverse	GGCCANNGCCNTGTTTGTCGCGTGCTATGTCTTTTTAGGTACTTTGAACCTACGTTCGTACTTGTATAATATGATCATCGTATTATCGTTTTTCATCCGTCCAGCGCAAAATGCATTAGCAGCTAGTCCTAGCGTGCGGAGCTACCTGGA CAGGTGCATGACGGATGCGTGTCCTTCAGTGACTTTCTAATTAACAGTAACTTCTTTACTTATGTTTCAGTTTGTAAGAAGCGGGATTCGCTCGTCGGTTGACATCTGATTGGACTGCGTCGGCACATGAAAACTACATTGTGAAATC TGCTAAAACTCCGGGTATCTCTGACACAAAACGATTCGGCTTCGCAATTTCAACATTACGGTCAAGGCTAACGTATCTTTCTCGGTCAACTTCAGATTATGCCGATTAAATTGTCGTAGCTTTCAAGGCGTTTTGAGTACTGCGGCAG TTGTTGAACCTGCAAGGAGAAGATCTCGACAACAGAATAAAGCGAAAAATGGGTCTCATGCACTAACACTCAGGCCTCCCTCATAATCTCTGTTTGAGTTTACCAACAACACATATATACATTTCGACAAAATGGCCGTCAAGCACTT GATCGTTCTCAAGTTCAAGGACGAAATCACCGAAGCCCAGAAGGAAGAATTCTTCAAGACCTACGTCAACCTCGTCAACATCATTCCCGCCATGAAGGATGTTTACTGGGGGAAAGGACGTCACCCAGAAGAACAAGGAAGAAG GTTACACCCACATCGTCGAAGTCACCTTTGAATCCGTTGAAACCATCCAGACTACATTATCCACCCNGCCCACGTNGGCTTCGNAGACGTCTACCGTTCTTTTGGNAAAGTGTTGATTTTCGACTACACCCCCCCGTAANGANANA GTGANTNNGAGAGNNNNNNNTAATTTGGTTANNNCNCNN
pOAC-7 sequencing Forward	CGNNNCGCCGTTTGTCGCGTGCTATGTCTTTTTAGGTACTTTGAACCTACGTTCGTACTTGTATAATATGATCAACGTATTATCGTTTTTCATCCGTCCAGCGCAAAATGCATTAGCAGCTAGTCCTAGCGTGCGGAGCTACCTGGACA GGTGCATGACGGATGCGTGTCCTTCAGTGACTTTCTAATTAACAGTAACTTCTTTACTTATGTTTCAGTTTGTAAGAAGCGGGATTCGCTCGTCGGTTGACATCTGATTGGACTGCGTCGGCACATGAAAACTACATTGTGAAATCTG CTAAAACTCCGGGTATCTCTGACACAAAACGATTCGGCTTCGCAATTTCAACATTACGGTCAAGGCTAACGTATCTTTCTCGGTCAACTTCAGATTATGCCGATTAAATTGTCGTAGCTTTCAAGGCGTTTTGAGTACTGCGGCAGTT GTTGAACCTGCAAGGAGAAGATCTCGACAACAGAATAAAGCGAAAAATGGGTCTCATGCACTAACACTCAGGCCTCCCTCATAATCTCTGTTTGAGTTTACCAACAACACATATATACATTTCGACAAAATGGCCGTCAAGCACTTG ATCGTTCTCAAGTTCAAGGACGAAATCACCGAAGCCCAGAAGGAAGAATTCTTCAAGACCTACGTCAACCTCGTCAACATCATTCCCGCCATGAAGGATGTTTACTGGGGGAAAGGACGTCACCCAGAAGAACAAAGAAGAAAG TTACACCCACATCGTCGAAGTCACCTTTGAATCCGTTGAAACCATCCAGACTACATTATCCACCCNNCCCACGTNGGCTTNNGAGACGTCTACCGTTCCTTTTGGNAAAGTTGTGATTTTCGACTACANCCCCCCGTAACNNCAGA GNNGANNCGAGAGNNNNCNNNNATTTGGTTAAATNNCCCNNANN
pOAC-7 sequencing Reverse	CNNTNNTGAATTCTTACGGGGGGTGTAGTCGAAATCAACAACTTTTCCCAAAAGGAACGGTAGACGTCTCCGAAGCCGACGTGGGCCGGGTGGATAATGTAGTCCTGGATGGTTTCAACGGATTCAAAGGTGACTTCGACGATG TGGGTGTAACCTTCTTCCTTGTTCTTCTGGGTGACGTCCTTTCCCCAGTAAACATCCTTCATGGCGGGAATGATGTTGACGAGGTTGACGTAGGTCTTGAAGAATTCTTCCTTCTGGGCTTCGGTGATTTCGTCCTTGAACTTGAGAA CGATCAAGTGCTTGACGGCCATTTTGTCGAAATGTATATATGTGTTGTTGGTAAACTCAAACAGAGATTATGAGGGAGGCCTGAGTGTTAGTGCATGAGACCCATTTTTCGCTTTATTCTGTTGTCGAGATCTTCTCCTTGCAGGTTCA ACAACTGCCGCAGTACTCAAAACGCCTTGAAAGCTACGACAATTTAATCGGCATAATCTGAAGTTGACCGAGAAAGATACGTTAGCCTTGACCGTAATGTTGAAATTGCGAAGCCGAATCGTTTTGTGTCAGAGATACCCGGAGTT TTAGCAGATTTCACAATGTAGTTTTCATGTGCCGACGCAGTCCAATCAGATGTCAACCGACGAGCGAATCCCGCTTCTTACAAACTGAAACATAAGTAAAGAAGTTACTGTTAATTAGAAAGTCACTGAAGGACACGCATCCGTCAT GCACCTGTCCAGGTAGCTCCGCACGCTAGGACTAGCTGCTAATGCATTTTGCGCTGGACGGATGAAAAACGATAATACGATGATCATATTATACAAGTACGAANGTNNNTTCAAAGTACCTAAAAAGACATAGCACGCGACAAACA TGANCNNNANATCNNNTCAGCTANNNANTATTNGCNGNCATAAAANNNGNTTNNN

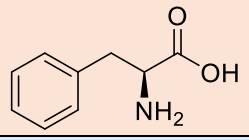
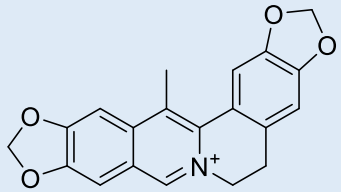
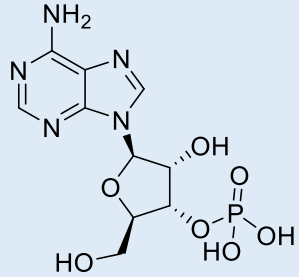
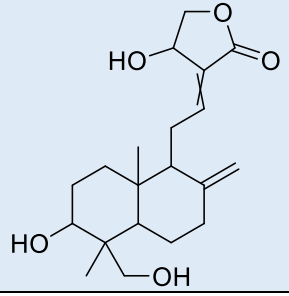
Supplementary Table 2: All primers sequences used in this study.

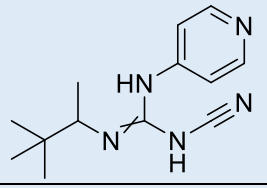
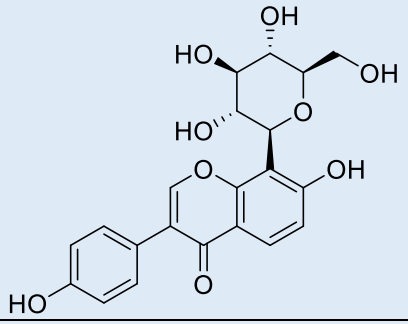
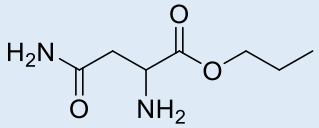
Identity	Sequence
OAC F	AAGCTGCAATACTAGCTTGA
OAC R	AACAAAATTAGAGGTCTTCT
TKS-F	ATGAACCACCTGCGTGCCGA
TKS-R	GTACTTAATCGGGACGGAGCGAACAACA

Supplementary Table 3: Annotated analytes deregulated in transconjuguants. The presence of the heterologous *Cs*TKS in *Phaeodactylum tricornutum*'s metabolism displays variations in the activity of the shikimate pathway, the nucleotide metabolism, and amino acids metabolism. Compounds in pink-orange are all upregulated while compounds in blue are deregulated. They are displayed in order of fold change from top to bottom. Biosynthesis / metabolic route section focuses on the common compounds or pathways between all analytes' biosynthesis possible routes.

Analyte	Chemical 2D structure	Compound Family	Biosynthetic Route
Proline Betaine		Dipeptide, quaternary ammonium amino acid	Pyruvate, glutamate, choline oxidation [1, 2]
3-hydroxy-C6-homoserine lactone		Acyl-homoserine-lactone (AHL)	AHL synthase on S-Adenosyl-Methionine [3]
Decyl dimethyl amine oxide		Amine oxide	Unelucidated
Thiamine		Vitamin/cofactor	Pyruvate and purine metabolism [1, 4]
Pyocyanine		Phenazine, pigment	Chorismate, pyruvate [5]
D-Carnitine		Quarternary ammonium amino acid	Trimethyllisine, pathway. Fatty acid metabolism [6, 7]

Isoastragaloside IV		Triterpenoid, saponin	Mevalonate (MVA) and methyerythriol phosphate (MEP) pathways [8, 9]
1-methyladenosine		Purine	Purine metabolism [1]
Bergenin		Lactone, isocoumarin	Shikimate pathway [9]

Phenylalanine		Amino acid	Shikimate pathway [1]
Worenine**		Isoquinoline	Unelucidated
Adenosine 3'-monophosphate		Purine	Purine metabolism [1]
Andrographolide		Diterpenoid	Mevalonate pathway [10]

Pinacidil		N-cyanoguanidine	Unelucidated
Puerarin (Isoflavonoid C-glycoside)		Isoflavonoid	L-phenylalanine [11]
Asparagine propyl ester		Modified amino acid	Unelucidated

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