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May 24, 2012

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This letter is updated periodically to reflect Illumina's current products, so please contact us for the most current version, or if you have any other questions.

Sincerely yours,

Customer Solutions
858-202-4566

Nextera® DNA Sample Preparation Kit (Illumina)^{1,2}

Nextera® transposase sequences (FC-121-1031, FC-121-1030)

5' TCGTCGGCAGCGTCAGATGTGTATAAGAGACAG
(a) Read 1 -->

5' GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAG
(d) Read 2 -->

Nextera® Index Kit- PCR primers (FC-121-1012, FC-121-1011)

5' AATGATACGGCGACCACCGAGATCTACAC [i5] TCGTCGGCAGCGTC
(c) i5 Index read -->

5' CAAGCAGAAGACGGCATACGAGAT [i7] GTCTCGTGGGCTCGG
<-- i7 Index read (b)

i5 bases in adapter	i5 index name	i5 bases for entry on sample sheet
<u>TAGATCGC</u>	N501	TAGATCGC
<u>CTCTCTAT</u>	N502	CTCTCTAT
<u>TATCCTCT</u>	N503	TATCCTCT
<u>AGAGTAGA</u>	N504	AGAGTAGA
<u>GTAAGGAG</u>	N505	GTAAGGAG
<u>ACTGCATA</u>	N506	ACTGCATA
<u>AAGGAGTA</u>	N507	AAGGAGTA
<u>CTAAGCCT</u>	N508	CTAAGCCT

i7 bases in adapter	i7 index name	i7 bases for entry on sample sheet
<u>TCGCCTTA</u>	N701	TAAGGCGA
<u>CTAGTACG</u>	N702	CGTACTAG
<u>TTCTGCCT</u>	N703	AGGCAGAA
<u>GCTCAGGA</u>	N704	TCCTGAGC
<u>AGGAGTCC</u>	N705	GGACTCCT
<u>CATGCCTA</u>	N706	TAGGCATG
<u>GTAGAGAG</u>	N707	CTCTCTAC
<u>CCTCTCTG</u>	N708	CAGAGAGG
<u>AGCGTAGC</u>	N709	GCTACGCT
<u>CAGCCTCG</u>	N710	CGAGGCTG
<u>TGCCTCTT</u>	N711	AAGAGGCA
<u>TCCTCTAC</u>	N712	GTAGAGGA

¹ Provided in reagents and used in methods protected by U.S. Patents 5,965,443; 6,437,109; and patents pending.

² Used in the methods of U.S. Patents 8,053,192 and 8,182,989.

Nextera® DNA Sample Prep Kit (Epicentre Biotechnologies) ^{1,2,3}

Transposon Sequences

5' -GCCTCCCTCGCGCCATCAGAGATGTGTATAAGAGACAG

5' -GCCTTGCCAGCCCGCTCAGAGATGTGTATAAGAGACAG

Adapters (showing optional bar code)

5' -AATGATACGGCGACCACCGAGATCTACACGCCTCCCTCGCGCCATCAG

5' -CAAGCAGAAGACGGCATACGAGAT [**barcode**] CGGTCTGCCTTGCCAGCCCGCTCAG-3'

PCR Primers

5' -AATGATACGGCGACCACCGA

5' -CAAGCAGAAGACGGCATACGA

TruSeq® Custom Amplicon (codes for entry on sample sheet) ^{2,4}

i5 index

A501	TGAACCTT
A502	TGCTAAGT
A503	TGTTCTCT
A504	TAAGACAC
A505	CTAATCGA
A506	CTAGAACA
A507	TAAGTTCC
A508	TAGACCTA

i5 code

i7 index

A701	ATCACGAC
A702	ACAGTGGT
A703	CAGATCCA
A704	ACAAACGG
A705	ACCCAGCA
A706	AACCCCTC
A707	CCCAACCT
A708	CACCACAC
A709	GAAACCCA
A710	TGTGACCA
A711	AGGGTCAA
A712	AGGAGTGG

i7 code

³ These kits are no longer available for purchase. As a replacement, we recommend FC-121-1031

⁴ Patent pending.

TruSeq® RNA and DNA Sample Prep Kits (v1 and v2)^{2,5}

TruSeq Universal Adapter

5' AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCT

TruSeq Adapter, Index 1⁵

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACATCACGATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 2

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACCGATGTATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 3

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACTTAGGCATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 4

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACTGACCAATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 5

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACACAGTGATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 6

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACGCCAATATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 7

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACCAGATATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 8

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACACTTGAATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 9

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACGATCAGATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 10

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACTAGCTTATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 11

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACGGCTACATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 12

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACCTTGTAATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 13

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACAGTCAACAATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 14

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACAGTTCCGTATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 15

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACATGTCAGAATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 16

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACCCGTCCCGATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 18⁶

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACGTCCGCACATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 19

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACGTGAACGATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 20

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACGTGGCCTTATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 21

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACGTTTCGGAATCTCGTATGCCGTCTTCTGCTTG

⁵ Index sequences are 6 bases as underlined. Please enter only these 6 bases on the sample sheet.

⁶ Index numbers 17, 24, and 26 are reserved.

TruSeq Adapter, Index 22

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACCGTACGTAATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 23

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACGAGTGGATATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 25

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACACTGATATATCTCGTATGCCGTCTTCTGCTTG

TruSeq Adapter, Index 27

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCACATTCCTTTATCTCGTATGCCGTCTTCTGCTTG

Oligonucleotide sequences for TruSeq® Small RNA Sample Prep Kit**RNA 5' Adapter (RA5), part # 15013205**

5' GUUCAGAGUUCUACAGUCCGACGAUC

RNA 3' Adapter (RA3), part # 15013207

5' TGGAAATTCTCGGGTGCCAAGG

Stop Oligo (STP)⁷

5' GAAUCCACCACGUUCCCGUGG

RNA RT Primer (RTP), part # 15013981

5' GCCTTGGCACCCGAGAATTCCA

RNA PCR Primer (RP1), part # 15005505

5' AATGATACGGCGACCACCGAGATCTACACGTTCTCAGAGTTCTACAGTCCGA

RNA PCR Primer, Index 1 (RPI1)^{2,8}

5' CAAGCAGAAGACGGCATACGAGATCGTGATGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 2 (RPI2)

5' CAAGCAGAAGACGGCATACGAGATACATCGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 3 (RPI3)

5' CAAGCAGAAGACGGCATACGAGATGCCTAAGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 4 (RPI4)

5' CAAGCAGAAGACGGCATACGAGATTGGTCAGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 5 (RPI5)

5' CAAGCAGAAGACGGCATACGAGATCACTGTGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 6 (RPI6)

5' CAAGCAGAAGACGGCATACGAGATATTGGCGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 7 (RPI7)

5' CAAGCAGAAGACGGCATACGAGATGATCTGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 8 (RPI8)

5' CAAGCAGAAGACGGCATACGAGATTCAAGTGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

⁷ Patent pending.

⁸ Index sequence is 6 bases as underlined; please enter only these 6 bases on the sample sheet. Please note the index sequence is read in the reverse complement in TruSeq small RNA libraries.

RNA PCR Primer, Index 9 (RPI9)

5' CAAGCAGAAGACGGCATAACGAGATCTGATCGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 10 (RPI10)

5' CAAGCAGAAGACGGCATAACGAGATAAGCTAGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 11 (RPI11)

5' CAAGCAGAAGACGGCATAACGAGATGTAGCCGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 12 (RPI12)

5' CAAGCAGAAGACGGCATAACGAGATTACAAGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 13 (RPI13)

5' CAAGCAGAAGACGGCATAACGAGATTTGACTGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 14 (RPI14)

5' CAAGCAGAAGACGGCATAACGAGATGGAAGTGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 15 (RPI15)

5' CAAGCAGAAGACGGCATAACGAGATTGACATGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 16 (RPI16)

5' CAAGCAGAAGACGGCATAACGAGATGGACGGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 17 (RPI17)

5' CAAGCAGAAGACGGCATAACGAGATCTCTACGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 18 (RPI18)

5' CAAGCAGAAGACGGCATAACGAGATGCGGACGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 19 (RPI19)

5' CAAGCAGAAGACGGCATAACGAGATTTTCACGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 20 (RPI20)

5' CAAGCAGAAGACGGCATAACGAGATGGCCACGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 21 (RPI21)

5' CAAGCAGAAGACGGCATAACGAGATCGAAACGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 22 (RPI22)

5' CAAGCAGAAGACGGCATAACGAGATCGTACGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 23 (RPI23)

5' CAAGCAGAAGACGGCATAACGAGATCCACTCGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 24 (RPI24)

5' CAAGCAGAAGACGGCATAACGAGATGCTACCGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 25 (RPI25)

5' CAAGCAGAAGACGGCATAACGAGATATCAGTGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 26 (RPI26)

5' CAAGCAGAAGACGGCATAACGAGATGCTCATGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 27 (RPI27)

5' CAAGCAGAAGACGGCATAACGAGATAGGAATGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 28 (RPI28)

5' CAAGCAGAAGACGGCATAACGAGATCTTTTGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 29 (RPI29)

5' CAAGCAGAAGACGGCATAACGAGATTAGTTGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 30 (RPI30)

5' CAAGCAGAAGACGGCATAACGAGATCCGGTGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 31 (RPI31)

5' CAAGCAGAAGACGGCATAACGAGATATCGTGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 32 (RPI32)

5' CAAGCAGAAGACGGCATAACGAGATTGAGTGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 33 (RPI33)

5' CAAGCAGAAGACGGCATAACGAGATCGCCTGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 34 (RPI34)

5' CAAGCAGAAGACGGCATAACGAGATGCCATGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 35 (RPI35)

5' CAAGCAGAAGACGGCATAACGAGATAAAATGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 36 (RPI36)

5' CAAGCAGAAGACGGCATAACGAGATTGTTGGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 37 (RPI37)

5' CAAGCAGAAGACGGCATAACGAGATATTCGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 38 (RPI38)

5' CAAGCAGAAGACGGCATAACGAGATAGCTAGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 39 (RPI39)

5' CAAGCAGAAGACGGCATAACGAGATGTATAGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 40 (RPI40)

5' CAAGCAGAAGACGGCATAACGAGATTCTGAGGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 41 (RPI41)

5' CAAGCAGAAGACGGCATAACGAGATGTCGTCTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 42 (RPI42)

5' CAAGCAGAAGACGGCATAACGAGATCGATTAGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 43 (RPI43)

5' CAAGCAGAAGACGGCATAACGAGATGCTGTAGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 44 (RPI44)

5' CAAGCAGAAGACGGCATAACGAGATATTATAGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 45 (RPI45)

5' CAAGCAGAAGACGGCATAACGAGATGAATGAGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 46 (RPI46)

5' CAAGCAGAAGACGGCATAACGAGATTCGGGAGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 47 (RPI47)

5' CAAGCAGAAGACGGCATAACGAGATCTTCGAGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

RNA PCR Primer, Index 48 (RPI48)

5' CAAGCAGAAGACGGCATAACGAGATTGCCGAGTGACTGGAGTTCCTTGGCACCCGAGAATTCCA

Oligonucleotide sequences for Genomic DNA**Adapters**

5' P-GATCGGAAGAGCTCGTATGCCGTCTTCTGCTTG

5' ACACTCTTTCCCTACACGACGCTCTTCCGATCT

PCR Primers

5' AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCT

5' CAAGCAGAAGACGGCATAACGAGCTCTTCCGATCT

Genomic DNA Sequencing Primer

5' ACACTCTTTCCCTACACGACGCTCTTCCGATCT

Paired End DNA oligonucleotide sequences

PE Adapters

5' P-GATCGGAAGAGCGGTTCAGCAGGAATGCCGAG
5' ACACTCTTTCCCTACACGACGCTCTTCCGATCT

PE PCR Primer 1.0

5' AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCT

PE PCR Primer 2.0

5' CAAGCAGAAGACGGCATACGAGATCGGTCTCGGCATTCCTGCTGAACCGCTCTTCCGATCT

PE Read 1 Sequencing Primer

5' ACACTCTTTCCCTACACGACGCTCTTCCGATCT

PE Read 2 Sequencing Primer

5' CGGTCTCGGCATTCCTGCTGAACCGCTCTTCCGATCT

Oligonucleotide sequences for the Multiplexing Sample Prep Oligo Only Kit²

Multiplexing Adapters

5' P-GATCGGAAGAGCACACGTCT
5' ACACTCTTTCCCTACACGACGCTCTTCCGATCT

Multiplexing PCR Primer 1.0

5' AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCT

Multiplexing PCR Primer 2.0

5' GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCT

Multiplexing Read 1 Sequencing Primer

5' ACACTCTTTCCCTACACGACGCTCTTCCGATCT

Multiplexing Index Read Sequencing Primer

5' GATCGGAAGAGCACACGTCTGAACTCCAGTCAC

Multiplexing Read 2 Sequencing Primer

5' GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCT

PCR Primer, Index 1

5' CAAGCAGAAGACGGCATACGAGATCGTGATGTGACTGGAGTTC

PCR Primer, Index 2

5' CAAGCAGAAGACGGCATACGAGATACATCGGTGACTGGAGTTC

PCR Primer, Index 3

5' CAAGCAGAAGACGGCATACGAGATGCCTAAGTGACTGGAGTTC

PCR Primer, Index 4

5' CAAGCAGAAGACGGCATACGAGATTGGTCAGTGACTGGAGTTC

PCR Primer, Index 5

5' CAAGCAGAAGACGGCATACGAGATCACTGTGTGACTGGAGTTC

PCR Primer, Index 6

5' CAAGCAGAAGACGGCATACGAGATATTGGCGTGACTGGAGTTC

PCR Primer, Index 7

5' CAAGCAGAAGACGGCATACGAGATGATCTGGTGACTGGAGTTC

PCR Primer, Index 8

5' CAAGCAGAAGACGGCATACGAGATTCAAGTGTGACTGGAGTTC

PCR Primer, Index 9

5' CAAGCAGAAGACGGCATACGAGATCTGATCGTGACTGGAGTTC

PCR Primer, Index 10

5' CAAGCAGAAGACGGCATACGAGATAAGCTAGTGACTGGAGTTC

PCR Primer, Index 11

5' CAAGCAGAAGACGGCATACGAGATGTAGCCGTGACTGGAGTTC

PCR Primer, Index 12

5' CAAGCAGAAGACGGCATACGAGATTACAAGGTGACTGGAGTTC

Oligonucleotide sequences for the v1 and v1.5 Small RNA Kits**RT Primer**

5' CAAGCAGAAGACGGCATACGA

5' RNA Adapter

5' GUUCAGAGUUCUACAGUCCGACGAUC

3' RNA Adapter

5' P-UCGUAUGCCGUCUUCUGCUUGuidT

v1.5 Small RNA 3' Adapter

5' /5rApp/ATCTCGTATGCCGTCTTCTGCTTG/3ddC/

Small RNA PCR Primer 1

5' CAAGCAGAAGACGGCATACGA

Small RNA PCR Primer 2

5' AATGATACGGCGACCACCGACAGGTTCTAGAGTTCTACAGTCCGA

Small RNA Sequencing Primer

5' CGACAGGTTCTAGAGTTCTACAGTCCGACGATC

Appendix: Process Controls for TruSeq® RNA, DNA (v1 and v2) and Exome Products ⁹

CTE2 - 150bp

ATCCTGCAGATGCATCCAGTACTAGTATGGCCCCGGGGGATCCTACGTTCCAAATGCAGCGAGCTCGTATA
ACCCTTTAAGAGTTGCTCTTTTTGTTTGGTAAGTTGCAAATCGAAGTTTTAGATTGAGTTCTACGTCGAG
CGGCCGCGAT

CTE2 - 250bp

ATCCTGCAGATGCATCCAGTACTAGTATGGCCCCGGGGGATCCTTATCTGTCAAAACCGCTAATGTCCGTT
CTAAGACCGTCTGGAGAACACTTGCCCATCAGTGCTTTTGAACCTTTTTTTTACAGGTCCCTTCCGATTA
CACTGAGAAGCTGACCACACCTGCTAGAAGATGGAGGTATGCAGCCCGTTAGTAGGAGTAATACTACCCA
GCTTATAACCCTCAAACGTAGGGCAGATGGCGGCCGCGAT

CTE2 - 350bp

ATCCTGCAGATGCATCCAGTACTAGTATGGCCCCGGGGGATCCTAGAGACCATTTCGCGATTCCATGAGACT
CCAAGGGTTCTGCACAACTTATGCACCTCTATTAGATCATTGTGTTCTACGAAGCCTGGACTGCATTACA
TATTCACAACCAACATGAGAAGAGCGGAATAGATGGCCGGATGTTTGGTGGCTTTGATATATTGTGAGGA
GCATTGCGAACCCTAGAGCTGTCCGGTCAAATAACCCCTCACAATAAGTGTAATGTCATGGGATAATCA
AAAGACTAAGGGAGGGCTTTTATAGAAGGCGTGAGGTCATGCTATCCCCCTCTGAAGACGCGGCCGCGAT

CTE2 - 450bp

ATCCTGCAGATGCATCCAGTACTAGTATGGCCCCGGGGGATCCGTATACGTTTCTAATTTGTAGTTAACGG
TTGGATACCACTTTGAGGCATGTAATATGGTACTGAGCTTCGGCACAGGGCTCAAATTGCATCATTAAT
GTCTCCGATGTGGCTATATGTCATGGATAAAGGCAGCCCCCTATATCTTTTTTTGTGGCAGCATGGGTCC
ATCAAAGCAATTATTCAGGGTCTTAATGACCTCCACAGCTCTAAACGTAATTCATCTGGCTTTGCCTGTA
CTTACTTCCCTCCATGAAAAAAGTGTTGATAATGCTCATAATGCTGCCAGCAATTTCCCTCCCTTCTCAA
GACTATTCTGGCTTCCCTGGGTACTTAAAAACAGGGCTTAGAGTATGGCTGCTGACAAAATTGCACTCTAA
ACGCTAGCTTAGGTCTTCTGCGGCCGCGAT

CTE2 - 550bp

ATCCTGCAGATGCATCCAGTACTAGTATGGCCCCGGGGGATCCGTAGCTATCGTTCGCGAGAAAGTTAGT
AGACACACAGGACCCAGGCGTGCAAGTCAATTTTACGCTGACTACACCGATTCTGGTTAAAAGAGCCTATG
GCCACCCTTATTTTAGAGAAAAAAACCACACCTCTAATGTGTTGGGCACTAGAAAAAGCTAACTACCTA
GTCCGTTTCTGGACGACTTCATTGGGAATAACATAACCCCCACTGTGATTAAGACTGGCACTGTCCTAAT
GCTTTCTTCAATAGGTTTGGCTCATGTGTGATTCCCTCTGGCAAACCTTATAGAGGACAAGCAGAAATAAC
CAATTCAAGGTCGTTGTAGCTGAAGGCCTGGCCTGCCTGACAGTTAATTATGAGCATGTCTTGGCCCTTCA
TGGTGGATATTCACAGCTGAAAGTGATTTGGCATTTTTTTTCTGAGGACACAACGAGGAAATCTGATAAA
TACGGCCACCTGAAGTCTAGCTCGGAGTTAACAATTTACCACGTTTAGAGCGGCCGCGAT

CTE2 - 650bp

ATCCTGCAGATGCATCCAGTACTAGTATGGCCCCGGGGGATCCGCTCGCACTTAGCCTGTAAAGGGTTTCG
CGCTCGTCTAGTCTGTGCTGTTGCCTGGATAGTAAATTATCATGGTACAAACTTTTAAAGAGCCAGTTAAA
TGGAGATGGATTTAAAAGAGTTATTGTAAAGTCTCCCCAGGTGTGTCATTAAATATCCCAACAGATTGC
CCTGGCCTGACCCCTAAATGCAATTTTGGGATTCCCTTTTAGTTGCTTTCATTAAAATGTACCAGCGCA
GTAAAAAAGCACAAAGTATATTGTTTATGTAACTCACTATCTCATTTGCACTGGTTACATGGCAGCTTC
AGACTGACTAAAACTACACTTTTCCCACCATGGTTCAAAGATCAACAGAACTGGGCCAACAAAAGCAATT
TTTTCATGTGGTCTAACTACCAACTTATTATGAGTTAAGTTACTTTTAGGTTTAAAATCACAGCAGTTTT
TCCCTCCACACCTCCCAGAGATACTTTCAGGGTGGCTAAACTTGGCTAAAGGCTTCCGGACCAACCCTTG
TTTCTTTATGGTGCTTGTGTCCTGACAACCGCGTAAGGCATGGAAATTCAGCTATTTATCCGATCGTTTA
TATGGGCGTGCGGCCGCGAT

⁹ Patent pending

CTE2 - 750bp

ATCCTGCAGATGCATCCAGTACTAGTATGGCCCCGGGGGATCCTTGGACCGTTAATTCATATATCGAAGTA
GCAGGTTGTTGCCCGCCTGATGTTGCCACTACTTGCTCATGACAGTTTTTTTTAGGCAATGCAAACTACT
ATTTGATATTTTTTTTCCAAGTACAGTTGTAGGGTACTCCTTATACTGATTCTTCTGAGCCTGTACGGGGA
GCATTAGGTACTGATGTAGTAGGAGTTGAGCTTCACAAATTCACCAGGTAAGCCCCAAATTTATTTTCTGC
TTGGACAGGTCCACCTCACATGGGTCTGTCTAATATATTAAAAGAGGGATTTTCTTTGCTGTATTGCAGC
CCAGTATATCTGTTACTTACAGTAGTAGTCCATTATTGCTGGCCTAGGGGCTTTTGTCTCTACACGAACA
CCACTCTGTAAAATTTGAGGTCGTCTTAGAGTCAAACCATTTCATGGAGCGCTCTGTGCATCTACCAACT
ATCGCTAAGCATTCACTTGGTTGGTTTAAAGTGGAGGCAACTCCATTATCTTCTAGCATACCCTTCCCAGG
CTACATGTAGAAAGAGATCTGTTGGGCCCCACTATTTTTTCAACCAGGGAAGCCTACTTTAGTTATAGCT
TGCCAGAGATTTTCTGTGTCATGTAGAAGTCATCCACTTTTAACACCAGGAGGTGGATGTGGGGCCAGGA
AATATGTCAATAACGATACGGGACTTCTAACAGTGACTCGCGGCCGCGAT

CTE2 - 850bp

ATCCTGCAGATGCATCCAGTACTAGTATGGCCCCGGGGGATCCTTAAGTCGTGTCTTCTCCTACGATCTT
GTGAACGATGGATATTTTCTTTCTAAACTTTAAACAAACAGTGGAGAGATGTTGTTGTGTGTGGAACGAC
GCTTAGCCTACCGAGGAAGATCCAGACTACAATAGAATATGTGGCCAAAACCTCTCCGCAACTTCAGCAGC
AAAAAGGATATTATTGACATAACCTCCTCACAAAAAGTACACAAATGGCTAAATAACAGAGCCCCCTCTTT
TTACTAGGGAAATGGTGGATGTGGACTTTAGAATTTAAGATAATAAAGCTCTTGATCCCAATGTTATTTT
CATGTGAGGGACATTAAATTGAGTAACCTTTGCCACATACCCTCTCCCAGAGTCCATTCTCTAAAACCTTG
AAGCTCCGCCCTTTTTACGCACATTAGGCTTCCAATTACGGTCAATGGTCTTGAAGATTGGGAGCTTTT
GAAGAGTAATAAGAACCATCACAAAAAGGAACCCAGAAGCCGGGAGTGTCTACCAAAAAAATTCAAGGT
TAAAAAAAAGTGACATTTTCTCCTGTTTTTTTACACATGATTTTGAATGCTGATGGGTCCACGTCCAGCTC
TAAAGGTAGGTTTCATGGTTCTCCAAAGTTGCTTTCTTGTGAGAATTGAGCCACATCAGGTAGGTGGGGAA
GTAGATCAGTGAGGATGCTTCACATGTGTGGGCACTGGGAACAGAATGCTTCAATAACACGAGCTGACGA
GGGCCCCGCTATGAAAAAAAAGATTCTCTGTGCCCCCTGGCGCCTCCGCACTTAAAGAATTGATGACCGTG
CGGCCGCGAT

CTE1 - 123bp

GATCCTACGTTCCAAATGCAGCGAGCTCGTATAACCCTTTAAGAGTTGCTCTTTTTGTTTGGTAAGTTGC
AAATCGAAGTTTTAGATTGAGTTCTACGTCGAGCGGCCGCGATATCCTGCAGATGCA

CTE1 - 223bp

GATCCTTATCTGTCAAAACCGCTAATGTCCGTTCTAAGACCGTCTGGAGAACACTTGCCCATCAGTGCTT
TTGAACCTTTTTTTTTCACAGGTCCCTTCCGATTACACTGAGAAGCTGACCACACCTGCTAGAAGATGGAGG
TATGCAGCCCGTTAGTAGGAGTAATACTACCCAGCTTATAACCCTCAAACGTAGGGCAGATGGCGGCCGC
GATATCCTGCAGATGCA

CTE1 - 323bp

GATCCTAGAGACCATTCGCGATTCCATGAGACTCCAAGGGTTCTGCACAACTTATGCACCTCTATTAGAT
CATTGTGTTCTACGAAGCCTGGACTGCATTACATATTCACAACCAACATGAGAAGAGCGGAATAGATGGC
CGGATGTTTGGTGGCTTTGATATATTGTGAGGAGCATTGCGAACCCTAGAGCTGTCCGGTCAAATAACCC
CCTCACAATAAGTGTAATGTCATGGGATAATCAAAAGACTAAGGGAGGGCTTTTATAGAAGGCGTGAGGT
CATGCTATCCCCCTCTGAAGACGCGGCCGCGATATCCTGCAGATGCA

CTE1 - 423bp

GATCCGTATACGTTTCTAATTTGTAGTTAACGGTTGGATACCACTTTGAGGCATGTAATATGGTACTGAG
CTTCGGCACAGGGCTCAAATTGCATCATTAATGTCTCCGATGTGGCTATATGTCATGGATAAAGGCAGC
CCCCATATCTTTTTTGTGGCAGCATGGGTCCATCAAAGCAATTATTCAGGGTCTTAATGACCTCCACA
GCTCTAAACGTAATTCATCTGGCTTTGCCTGTACTTACTTCTCCATGAAAAAAGTGTGATAATGCTC
ATAATGCTGCCCAGCAATTTCTCCCTTCTCAAGACTATTCTGGCTTCTGGGTACTTAAAAACAGGGCT
TAGAGTATGGCTGCTGACAAAATTGCACTCTAAACGCTAGCTTAGGTCTTCTGCGGCCGCGATATCCTGC
AGATGCA

CTE1 - 523bp

GATCCGTTAGCTATCGTTCGCGAGAAAGTTAGTAGACACACAGGACCCAGGCGTGCAAGTCAATTTTCAGC
TGACTACACCGATTCTGGTTAAAAAGAGCCTATGGCCACCCTTATTTTAGAGAAAAAAACCACACCTCTA
ATGTGTTGGGCACTAGAAAAAGCTAACTACCTAGTCCGTTTCTGGACGACTTCATTGGGAATAACATACC
CCCCACTGTGATTAAGACTGGCACTGTCTAATGCTTTCTTCAATAGGTTTGGCTCATGTGTGATTCCCT
CTGGCAAACCTTATAGAGGACAAGCAGAATAAACCAATTCAAGGTCGTTGTAGCTGAAGGCCTGGCCTGCC
TGACAGTTAATTATGAGCATGTCTTGCCCTTCATGGTGGATATTACAGCTGAAAGTGGTATTGGCATT
TTTTCTGAGGACACAACGAGGAAATCTGATAAATACGGCCACCTGAAGTCTAGCTCGGAGTTAACAATTT
ACCACGTTTAGAGCGGCCGCGATATCCTGCAGATGCA

CTE1 - 623bp

GATCCGCTCGCACTTAGCCTGTAAAGGGGTTGCGGCTCGTCTAGTCTGTGCTGTTGCCTGGATAGTAAAT
TATCATGGTACAACTTTTAAAGAGCCAGTTAAATGGAGATGGATTTAAAAAGAGTTATTGTAAAGTCTCC
CCAGGTGTGTCATTAAATATCCCAACAGATTGCCCTGGCCTGACCCCTAAATGCAATTTTGGGATTCCC
TTTTAGTTGCTTTTCATTAAATGTACCAGCGCAGTAAAAAAGCACAAAGTATATTGTTTATGTAACTCA
CTATCTCATTGCACTGGTTACATGGCAGCTTCAGACTGACTAAACTACACTTTTCCCACCATGGTTCA
AAGATCAACAGAAGTGGGCCAACAAAAGCAATTTTTTTCATGTGGTCTAACTACCAACTTATTATGAGTTA
AGTTACTTTTAGGTTTAAATCACAGCAGTTTTTCCCTCCACACCTCCCAGAGATACTTTTCAGGGTGGCT
AACTTGGCTAAAGGCTTCCGGACCAACCCTTGTTTCTTTATGGTGCTTGTGTCTGACAACCGCGTAAG
GCATGGAAATTCAGCTATTTATCCGATCGTTTATATGGGCGTGCGGCCGCGATATCCTGCAGATGCA

CTE1 - 723bp

GATCCTTGGACCGTTAATTCATATATCGAAGTAGCAGGTTGTTGCCCGCCTGATGTTGCCACTACTTGC
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CCTTATACTGATTCTTCTGAGCCTGTACGGGGAGCATTAGGTACTGATGTAGTAGGAGTTGAGCTTCACA
AATTCACCAGGTAAGCCCAAATTTATTTTTCTGCTTGGACAGGTCCACCTCACATGGGTCTGTCTAATATA
TTAAAAAGAGGGATTTTCTTTGCTGTATTGCAGCCCAGTATATCTGTTACTTACAGTAGTAGTCCATTATT
GCTGGCCTAGGGGCTTTTGCTCCTACACGAACACCCTCTGTAAATTTGAGGTCGTCCTTAGAGTCAAA
CCATTCATGGAGCGCTCTGTGCATCTACCAACTATCGCTAAGCATTCACTTGGTTGGTTTAAAGTGGAGGC
AACTCCATTATCTTCTAGCATAACCCTTCCCAGGCTACATGTAGAAAGAGATCTGTTGGGCCCCACTATTT
TTTACCCAGGGAAGCCTACTTTAGTTATAGCTTGCCAGAGATTTTCTGTGTGTCATGTAGAAGTCATCCAC
TTTTAACACCAGGAGGTGGATGTGGGGCCAGGAAATATGTCAATAACGATACGGGACTTCTAACAGTGAC
TCGCGGCCGCGATATCCTGCAGATGCA

CTE1 - 823bp

GATCCTTAAGTCGTGTCCTTCTCCTACGATCTTGTGAACGATGGATATTTTCTTTCTAACTTTAAACAA
ACAGTGGAGAGATGTTGTTGTGTGTGGAACGACGCTTAGCCTACCGAGGAAGATCCAGACTACAATAGAA
TATGTGGCCAAACTCTCCGCAACTTCAGCAGCAAAAAGGATATTATTGACATAACCTCCTCACAAAAG
TACACAAATGGCTAAATAACAGAGCCCCTCTTTTTACTAGGGAAATGGTGGATGTGGACTTTAGAATTTA
AGATAATAAAGCTCTTGATCCCAATGTTATTTCCATGTGAGGGACATTAAATTGAGTAACCTTTGCCACA
TACCCTCTCCCAGAGTCCATTCTCTAAAACCTGAAGCTCCGCCCTTTTTACGCACATTAGGCTTCCAAT
TACGGTCAATGGTCTTGAAGATTGGGAGCTTTTGAAGAGTAATAAGAACCATCACAAAAGGAACCCAGA
AGCCGGGAGTGTCTACCAAAAAAATTCAAGGGTTAAAAAAAGTGACATTTTCTCCTGTTTTTTTACACAT
GATTTTGAATGCTGATGGGTCCACGTCCAGCTCTAAAGGTAGGTTTCATGGTTCTCCAAAGTTGCTTTCTT
GTCAGAATTGAGCCACATCAGGTAGGTGGGGAAGTAGATCAGTGAGGATGCTTCACATGTGTGGGCACTG
GGAACAGAATGCTTCAATAACACGAGCTGACGAGGGCCCGCTATGAAAAAAAGATTCTCTGTGCCCCCT
GGCGCCTCCGCACTTAAAGAATTGATGACCGTGCGGCCGCGATATCCTGCAGATGCA

CTA - 150bp

GGGGGATCCTACGTTCCAAATGCAGCGAGCTCGTATAACCCTTTAAGAGTTGCTCTTTTTGTTTGGTAAG
TTGCAAATCGAAGTTTATAGATTGAGTTCTACGTCGAGCGGCCGCGATATCCTGCAGATGCATCCAGTACT
AGTATGGCCC

CTA - 250bp

GGGGGATCCTTATCTGTCAAAACCGCTAATGTCCGTTCTAAGACCGTCTGGAGAACACTTGCCCATCAGT
GCTTTTGAACCTTTTTTTTTCACAGGTCCCTTCCGATTACACTGAGAAGCTGACCACACCTGCTAGAAGATG
GAGGTATGCAGCCCGTTAGTAGGAGTAATACTACCCAGCTTATAACCCTCAAACGTAGGGCAGATGGCGG
CCGCGATATCCTGCAGATGCATCCAGTACTAGTATGGCCC

CTA - 350bp

GGGGGATCCTAGAGACCATTTCGCGATTCCATGAGACTCCAAGGGTCTGCACAACTTATGCACCTCTATT
AGATCATTGTGTTCTACGAAGCCTGGACTGCATTACATATTACAAACCAACATGAGAAGAGCGGAATAGA
TGGCCGGATGTTTGGTGGCTTTGATATATTGTGAGGAGCATTGCGAACCCTAGAGCTGTCCGGTCAAATA
ACCCCTCACAATAAGTGTAAATGTCATGGGATAATCAAAGACTAAGGGAGGGCTTTTATAGAAGGCGTG
AGGTCATGCTATCCCCCTCTGAAGACGCGGCCGCGATATCCTGCAGATGCATCCAGTACTAGTATGGCCC

CTA - 450bp

GGGGGATCCGTATACGTTTCTAATTTGTAGTTAACGGTTGGATACCACTTTGAGGCATGTAATATGGTAC
TGAGCTTCGGCACAGGGCTCAAATTGCATCATTAAATGTCTCCGATGTGGCTATATGTCATGGATAAAGG
CAGCCCCCTATATCTTTTTTTGTGGCAGCATGGGTCCATCAAAGCAATTATTCAGGGTCTTAATGACCTC
CACAGCTCTAAACGTAATTCATCTGGCTTTGCCTGTACTTACTTCCTCCATGAAAAAAAGTGTTGATAAT
GCTCATAATGCTGCCAGCAATTTCTCCCTTCTCAAGACTATTCTGGCTTCCTGGGTACTTAAAAACAG
GGCTTAGAGTATGGCTGCTGACAAAATTGCACTCTAAACGCTAGCTTAGGTCTTCTGCGGCCGCGATATC
CTGCAGATGCATCCAGTACTAGTATGGCCC

CTA - 550bp

GGGGGATCCGTTAGCTATCGTTTCGCGAGAAAGTTAGTAGACACACAGGACCCAGGCGTGCAAGTCAATTT
CAGCTGACTACACCGATTCTGGTTAAAAGAGCCTATGGCCACCCCTATTTTATAGAGAAAAAAAACACACC
TCTAATGTGTTGGGCACCTAGAAAAAGCTAACTACCTAGTCCGTTTCTGGACGACTTCATTGGGAATAACA
TACCCCCCACTGTGATTAAGACTGGCACTGTCTAATGCTTTCTTCAATAGGTTTGGCTCATGTGTGATT
CCCTCTGGCAAACCTTATAGAGGACAAGCAGAATAAACCAATTCAAGGTCGTTGTAGCTGAAGGCCTGGCC
TGCCTGACAGTTAATTATGAGCATGTCTTGCCCTTCATGGTGGATATTACAGCTGAAAGTGGTATTGGC
ATTTTTTTCTGAGGACACAACGAGGAAATCTGATAAATACGGCCACCTGAAGTCTAGCTCGGAGTTAACA
ATTTACCACGTTTAGAGCGGCCGCGATATCCTGCAGATGCATCCAGTACTAGTATGGCCC

CTA - 650bp

GGGGGATCCGCTCGCACTTAGCCTGTAAAGGGGTTTCGCGCTCGTCTAGTCTGTGCTGTTGCCTGGATAGT
AAATTATCATGGTACAAACTTTTTAAAGAGCCAGTTAAATGGAGATGGATTTAAAAAGAGTTATTGTAAAGT
CTCCCCAGGTGTGTCATTAAATATCCCAACAGATTGCCCTGGCCTGACCCCCCTAAATGCAATTTTGGGAT
TCCCTTTTAGTTGCTTTTATTAAATGTACCAGCGCAGTAAAAAAAGCACAAAGTATATTGTTTATGTAA
CTCACTATCTCATTTGCACTGGTTACATGGCAGCTTCAGACTGACTAAAACTACACTTTTCCCACCATGG
TTCAAAGATCAACAGAACTGGGCCAACAAAAGCAATTTTTTTCATGTGGTCTAACTACCAACTTATTATGA
GTTAAGTTACTTTTAGGTTTAAATCACAGCAGTTTTTCCCTCCACACCTCCCAGAGATACTTTCAGGGT
GGCTAAACTTGCTAAAGGCTTCCGGACCAACCCTTGTTTCTTTATGGTGCTTGTGTCCTGACAACCGCG
TAAGGCATGGAAATTCAGCTATTTATCCGATCGTTTATATGGGCGTGCGGCCGCGATATCCTGCAGATGC
ATCCAGTACTAGTATGGCCC

CTA - 750bp

GGGGGATCCTTGGACCGTTAATTCATATATCGAAGTAGCAGGTTGTTGCCCCGCTGATGTTGCCACTAC
TTGCTCATGACAGTTTTTTTTAGGCAATGCAAACTACTATTTGATATTTTTTTTCCAAGTACAGTTGTAGGG
TACTCCTTATACTGATTCTTCTGAGCCTGTACGGGGAGCATTAGGTACTGATGTAGTAGGAGTTGAGCTT
CACAAATTCACCAGGTAAGCCCAAATTTATTTTCTGCTTGACAGGTCCACCTCACATGGGTCTGTCTAA
TATATTAAAAGAGGGATTTTCTTTGCTGTATTGCAGCCCAGTATATCTGTTACTTACAGTAGTAGTCCAT
TATTGCTGGCCTAGGGGCTTTTGTCTTACACGAACACCACTCTGTAAATTTGAGGTCGTCTCTAGAGT
CAAACCATTCATGGAGCGCTCTGTGCATCTACCAACTATCGCTAAGCATTCACTTGGTTGGTTTAAAGTGG
AGGCAACTCCATTATCTTCTAGCATACCCTTCCCAGGCTACATGTAGAAAGAGATCTGTTGGGCCCCACT
ATTTTTTCACCCAGGGAAGCCTACTTTAGTTATAGCTTGCCAGAGATTTTCTGTGTCATGTAGAAGTCAT
CCACTTTTAAACACCAGGAGGTGGATGTGGGGCCAGGAAATATGTCAATAACGATACGGGACTTCTAACAG
TGACTCGCGGCCGCGATATCCTGCAGATGCATCCAGTACTAGTATGGCCC

CTA - 850bp

GGGGGATCCTTAAGTCGTGTCCTTCTCCTACGATCTTGTGAACGATGGATATTTTCTTTCTAAACTTTAA
ACAAACAGTGGAGAGATGTTGTTGTGTGTGGAACGACGCTTAGCCTACCGAGGAAGATCCAGACTACAAT
AGAATATGTGGCCAAAACCTCTCCGCAACTTCAGCAGCAAAAAGGATATTATTGACATAACCTCCTCACAA
AAAGTACACAAATGGCTAAATAACAGAGCCCCCTCTTTTTACTAGGGAAATGGTGGATGTGGACTTTAGAA
TTTAAGATAATAAAGCTCTTGATCCCAATGTTATTTCCATGTGAGGGACATTAAATTTGAGTAACCTTTGC
CACATACCCTCTCCCAGAGTCCATTCTCTAAAACTTGAAGCTCCGCCCCCTTTTACGCACATTAGGCTTC
CAATTACGGTCAATGGTCTTGAAGATTGGGAGCTTTTGAAGAGTAATAAGAACCATCACAAAAAGGAACC
CAGAAGCCGGGAGTGTCTACCAAAAAAATTCAAGGGTTAAAAAAAAGTGACATTTTCTCCTGTTTTTTAC
ACATGATTTTGAATGCTGATGGGTCCACGTCCAGCTCTAAAGGTAGGTTTCATGGTTCTCCAAAGTTGCTT
TCTTGTGAGAATTGAGCCACATCAGGTAGGTGGGGAAGTAGATCAGTGAGGATGCTTCACATGTGTGGGC
ACTGGGAACAGAATGCTTCAATAACACGAGCTGACGAGGGCCCCGCTATGAAAAAAAGATTCTCTGTGCC
CCCTGGCGCCTCCGCACTTAAAGAATTGATGACCGTGCGGCCGCGATATCCTGCAGATGCATCCAGTACT
AGTATGGCCC

CTL - 150bp

AGTATGGCCCCGGGGGATCCTACGTTCCAAATGCAGCGAGCTCGTATAACCCTTTAAGAGTTGCTCTTTTT
GTTTGGTAAGTTGCAAATCGAAGTTTTAGATTGAGTTCTACGTGAGCGGCCGCGATATCCTGCAGATGC
ATCCAGTACA

CTL - 250bp

AGTATGGCCCCGGGGGATCCTTATCTGTCAAACCGCTAATGTCCGTTCTAAGACCGTCTGGAGAACACTT
GCCCCATCAGTGCTTTTGAACCTTTTTTTTTCACAGGTCCCTTCCGATTACACTGAGAAGCTGACCACACCTG
CTAGAAGATGGAGGTATGCAGCCCCGTTAGTAGGAGTAATACTACCCAGCTTATAACCCTCAAACGTAGGG
CAGATGGCGGCCGCGATATCCTGCAGATGCATCCAGTACA

CTL - 350bp

AGTATGGCCCCGGGGGATCCTAGAGACCATTTCGCGATTCCATGAGACTCCAAGGGTTCTGCACAACTTATG
CACCTCTATTAGATCATTGTGTTCTACGAAGCCTGGACTGCATTACATATTACAAACCAACATGAGAAGA
GCGGAATAGATGGCCGGATGTTTGGTGGCTTTGATATATTGTGAGGAGCATTGCGAACCCTAGAGCTGTC
CGGTCAAATAACCCCCCTCACAAATAAGTGTAATGTCATGGGATAATCAAAGACTAAGGGAGGGCTTTTAT
AGAAGCGTGAGGTCATGCTATCCCCCTCTGAAGACGCGGCCGCGATATCCTGCAGATGCATCCAGTACA

CTL - 450bp

AGTATGGCCCCGGGGGATCCGTATACGTTTCTAATTTGTAGTTAACGGTTGGATAACCACTTTGAGGCATGT
AATATGGTACTGAGCTTCGGCACAGGGCTCAAATTGCATCATTAATGTCTCCGATGTGGCTATATGTCA
TGGATAAAGGCAGCCCCCTATATCTTTTTTTTGTGGCAGCATGGGTCCATCAAAGCAATTATTCAGGGTCT
TAATGACCTCCACAGCTCTAAACGTAATTCATCTGGCTTTGCCTGTACTTACTTCCTCCATGAAAAAAG
TGTTGATAATGCTCATAATGCTGCCCAGCAATTTCTCCCTTCTCAAGACTATTCTGGCTTCCTGGGTAC
TTAAAAACAGGGCTTAGAGTATGGCTGCTGACAAAATTGCACTCTAAACGCTAGCTTAGGTCTTCTGCGG
CCGCGATATCCTGCAGATGCATCCAGTACA

CTL - 550bp

AGTATGGCCCCGGGGGATCCGTTAGCTATCGTTTCGCGAGAAAGTTAGTAGACACACAGGACCCAGGCGTG
AAGTCAATTTTACGCTGACTACACCGATTCTGGTTAAAAGAGCCTATGGCCACCCTTATTTTAGAGAAAA
AAACCACACCTCTAATGTGTTGGGCACAGAAAAAGCTAACTACCTAGTCCGTTTCTGGACGACTTCATT
GGGAATAACATAACCCCCACTGTGATTAAGACTGGCACTGTCCTAATGCTTTCTTCAATAGGTTTGGCTC
ATGTGTGATTCCCTCTGGCAAACCTTATAGAGGACAAGCAGAATAAACCAATTCAAGGTCGTTGTAGCTGA
AGGCCTGGCCTGCCTGACAGTTAATTATGAGCATGTCTTGCCTTCATGGTGGATATTCACAGCTGAAAG
TGGTATTGGCATTTTTTTCTGAGGACACAACGAGGAAATCTGATAAATACGGCCACCTGAAGTCTAGCTC
GGAGTTAACAATTTACCACGTTTAGAGCGGCCGCGATATCCTGCAGATGCATCCAGTACA

CTL - 650bp

AGTATGGCCCCGGGGGATCCGCTCGCACTTAGCCTGTTAAGGGGTTCGCGCTCGTCTAGTCTGTGCTGTTG
CCTGGATAGTAAATTATCATGGTACAACTTTTTAAGAGCCAGTTAAATGGAGATGGATTTAAAAAGAGTT
ATTGTAAAGTCTCCCCAGGTGTGTTCATTAAATATCCCAACAGATTGCCCTGGCCTGACCCCTAAATGCA
ATTTTGGGATTCCCTTTTAGTTGCTTTCATTAAAAATGTACCAGCGCAGTAAAAAAGCACAAAGTATATT
GTTTATGTAACCTACTATCTCATTTGCACTGGTTACATGGCAGCTTCAGACTGACTAAAACTACACTTTT
CCCACCATGGTTCAAAGATCAACAGAACTGGGCCAACAAAAGCAATTTTTTCATGTGGTCTAACTACCAA
CTTATTATGAGTTAAGTTACTTTTAGGTTTAAAATCACAGCAGTTTTTCCCTCCACACCTCCCAGAGATA
CTTTCAGGGTGGCTAAACTTGGCTAAAGGCTTCCGGACCAACCCTTGTTTCTTTATGGTGCTTGTGTCCT
GACAACCGCGTAAGGCATGGAAATTCAGCTATTTATCCGATCGTTTATATGGGCGTGCGGCCGCGATATC
CTGCAGATGCATCCAGTACA

CTL - 750bp

AGTATGGCCCCGGGGGATCCTTGGACCGTTAATTCATATATCGAAGTAGCAGGTTGTTGCCCCGCCTGATG
TTGCCACTACTTGCTCATGACAGTTTTTTTTAGGCAATGCAAACTACTATTTTGATATTTTTTTTCCAAGTAC
AGTTGTAGGGTACTCCTTATACTGATTCTTCTGAGCCTGTACGGGGAGCATTAGGTACTGATGTAGTAGG
AGTTGAGCTTCACAAATTCACCAGGTAAGCCCAAATTTATTTTCTGCTTGGACAGGTCCACCTCACATGG
GTCTGTCTAATATATTTAAAGAGGGATTTTCTTTGCTGTATTGCAGCCCAGTATATCTGTTACTTACAGT
AGTAGTCCATTATTGCTGGCCTAGGGGCTTTTGCTCCTACACGAACACCACTCTGTAAAATTTGAGGTCTG
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GGGCCCCACTATTTTTTACCCAGGGAAGCCTACTTTAGTTATAGCTTGCCAGAGATTTTCTGTGTCATG
TAGAAGTCATCCACTTTTAACACCAGGAGGTGGATGTGGGGCCAGGAAATATGTCAATAACGATACGGGA
CTTCTAACAGTGA CTGCGGCCGCGATATCCTGCAGATGCATCCAGTACA

CTL - 850bp

AGTATGGCCCCGGGGGATCCTTAAGTCGTGTCTTCTCCTACGATCTTGTGAACGATGGATATTTTCTTTT
TAAACTTTTAAACAAACAGTGGAGAGATGTTGTTGTGTGTGGAACGACGCTTAGCCTACCGAGGAAGATCC
AGACTACAATAGAATATGTGGCCAAAACCTCTCCGCAACTTCAGCAGCAAAAAGGATATTATTGACATAAC
CTCCTCACAAAAAGTACACAAATGGCTAAATAACAGAGCCCCCTCTTTTTACTAGGGAAATGGTGGATGTG
GACTTTAGAATTTAAGATAATAAAGCTCTTGATCCCAATGTTATTTCCATGTGAGGGACATTAAATTGAG
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TCTCTGTGCCCCCTGGCGCCTCCGCACTTAAAGAAATTGATGACCGTGCGGCCGCGATATCCTGCAGATGC
ATCCAGTACA