1/26/2018 ExonPrimer

Genomic sequence: hg38 chr12:4433142-4446614 rev

cDNA sequence: uc001qmr.2

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EMBL formatted genomic sequence (may be used as reference sequence within the Staden package)
cDNA sequence formatted with Showseq (from the EMBOSS package)
Duplications masked
Table of primers (for re-PCR)
Exon1: 346 bp, Product size 511
Exon2: 104 bp, Product size 243
Exon3: 177 bp, Product size 303
Exon1: 346 bp
OLIGO
                   len
              start
                          tm
                                     any
                                               rep sea
LEFT PRIMER
               948
                    17
                        61.10
                               58.82 3.00 3.00 9.00 AAATAAGCCCCTGCCGC
RIGHT PRIMER
              1458
                    20
                        60.97 55.00 2.00 1.00 12.00 CCCTTCACCTTTTAGCCCTG
PRODUCT SIZE: 511, PAIR ANY COMPL: 3.00, PAIR 3' COMPL: 1.00
TARGETS (start, len)*: 1009,416
 900 CCGATGGAGGCTTTGGTTTCATGTCAGCAGCCTTCATCTGCCTTCCAAAAATAAGCCCCT
                                            >>>>>>>>>
 960 GCCGCCATGCCGGAGGGAGAAAAACAAGAAGGGCGGTATTTTTAGGGCCATTAATTCTGA
                                             XXXXXXXXXX
     >>>>>
 1020 CCACGTGCCTGAGAGGCAAGGTGGATGGCCCTGGGACAGAAACTGTTCATCACTATGTCC
     1080 CGGGGAGCAGGACGTCTGCAGGGCACGCTGTGGGCTCTNGTCTTCCTAGGCATCCTAGTG
     **********************
1140 GGCATGGTGGNGCCCTCGCCTGCAGGCACCCGTGCCAACAACACGCTGCTGGACTCGAGG
 1200 GGCTGGGGCACCCTGCTGTCCAGGTCTCGCGNNGGGCTAGCTGGAGAGATTGCCGGGGTG
     ************************
1260 AACTGGGAAAGTGGCTATTTGGTGGGGATCAAGCGGCAGCGGAGGCTCTACTGCAACGTG
     ************************
 1320 GGCATCGGCTTTCACCTCCAGGTGCTCCCCGACGGCCGGATCAGCGGNACCCACGAGGAG
     ************************
1380 AACCCCTACAGTGAGTGCCAGCTGCANCCAGTCNGGACGCTTGGGGGTTTGGGCTCATGC
     1440 AGGGCTAAAAGGTGAAGGGGCCCTGCTCTAGNGGACAGGATGCACGATAAAGGGGGCAGA
     <<<<<<<<<
 ADDITIONAL OLIGOS
                start len
                             tm
                                   gc%
                                        any
                                                  rep seq
1 LEFT PRIMER
                  948
                       17
                           61.10
                                 58.82 3.00 3.00 9.00 AAATAAGCCCCTGCCGC
  RIGHT PRIMER
                 1457
                       20
                           61.11
                                 55.00
                                       2.00 2.00 12.00 CCTTCACCTTTTAGCCCTGC
  PRODUCT SIZE: 510, PAIR ANY COMPL: 3.00, PAIR 3' COMPL: 2.00
2 LEFT PRIMER
                  947
                           62.33
                                 55.56 3.00 3.00 9.00 AAAATAAGCCCCTGCCGC
                       18
  RIGHT PRIMER
                 1458
                       20
                           60.97
                                 55.00 2.00 1.00 12.00 CCCTTCACCTTTTAGCCCTG
  PRODUCT SIZE: 512, PAIR ANY COMPL: 4.00, PAIR 3' COMPL: 1.00
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52.94 2.00 2.00 9.00 AAAATAAGCCCCTGCCG
 3 LEFT PRIMER
                   947
                         17
                              58.66
                                     55.00 2.00 1.00 12.00 CCCTTCACCTTTTAGCCCTG
                   1458
                              60.97
  RIGHT PRIMER
                         20
  PRODUCT SIZE: 512, PAIR ANY COMPL: 4.00, PAIR 3' COMPL: 1.00
4 LEFT PRIMER
                   947
                         18
                                     55.56 3.00 3.00 9.00 AAAATAAGCCCCTGCCGC
                              62.33
                   1457
                         20
                              61.11
                                     55.00 2.00 2.00 12.00 CCTTCACCTTTTAGCCCTGC
  RIGHT PRIMER
  PRODUCT SIZE: 511, PAIR ANY COMPL: 4.00, PAIR 3' COMPL: 2.00
Statistics
                   in
                         in
                                               tm high high
                                                             high
                                                                        high
        con
             too
                                    no
                                         tm
        sid
                       excl
                              bad
                                    GC
                                        too
                                              too
                                                          3'
                                                              lib
                                                                   poly
                                                                         end
            many
                   tar
                                                   any
       ered
              Ns
                   get
                             GC% clamp
                                        low
                                             high compl compl
                                                              sim
                                                                     Χ
                                                                        stab
                                                                               ok
                        reg
Left
                                         0
                                               74
                                                                0
        140
               0
                              13
                                    22
                                                     a
                                                          a
                                                                    28
                                                                           a
                    0
                          0
                    0
                                                     0
                                                           2
                                                                0
                                                                           0
Right
        210
              20
                          0
                               0
                                    16
                                         22
                                              106
                                                                     a
                                                                                44
Pair Stats:
considered 143, unacceptable product size 138, ok 5
primer3 release 1.1.1
Exon2: 104 bp
OLIGO
               start
                             tm
                                    gc%
                                         any
                                                    rep sea
LEFT PRIMER
                2297
                      19
                          59.36
                                  57.89 3.00 2.00 12.00 GACTGAGATGCCCTTGTCG
                2539
                     21
                                47.62 3.00 1.00 12.00 CAACTGTGTAAGCATCAAGCC
RIGHT PRIMER
                          58.45
PRODUCT SIZE: 243, PAIR ANY COMPL: 5.00, PAIR 3' COMPL: 1.00
TARGETS (start, len)*: 2343,174
2280 CTAGGAGAAGGGGGATGGACTGAGATGCCCTTGTCGGCTCAAGTTCCCACTCTGATTTGC
                    2340 ACAAGCCTTAGGTAATGTGGCCCCCTTTCCTTGTCAGGCCTGCTGGAAATTTCCACNGT
        2400 GGAGCGAGGCGTGGTGAGTCTCTTTGGAGTGAGAGTGCCCTCTTCGTNGCCATGAACAG
     **********************
 2460 TAAAGGAAGATTGTACGCAACGGTGAGTTCACCAGGCCGGGGAAGTGCCAGGTTTACAAG
     2520 GCTTGATGCTTACACAGTTGAAGAAAATAATATGAANTCCTGAGTAGAAGAGTGACTATC
     <<<<<<<<<
 2580 TAAATGGGAAAGGAaaNgctgtgagaggagcctgtgaaagggaggggccttgcagcttgt
            ADDITIONAL OLIGOS
                  start len
                                                  3'
                                       gc%
                                            any
                                tm
                                                       rep seq
 1 LEFT PRIMER
                   2309
                         19
                              60.79
                                     57.89 4.00 0.00 11.00 CTTGTCGGCTCAAGTTCCC
                   2539
                         21
                              58.45
                                     47.62 3.00 1.00 12.00 CAACTGTGTAAGCATCAAGCC
  RIGHT PRIMER
  PRODUCT SIZE: 231, PAIR ANY COMPL: 4.00, PAIR 3' COMPL: 1.00
 2 LEFT PRIMER
                   2308
                         19
                              60.79
                                     57.89 4.00 0.00 11.00 CCTTGTCGGCTCAAGTTCC
  RIGHT PRIMER
                   2539
                              58.45
                                     47.62 3.00 1.00 12.00 CAACTGTGTAAGCATCAAGCC
                         21
  PRODUCT SIZE: 232, PAIR ANY COMPL: 4.00, PAIR 3' COMPL: 2.00
 3 LEFT PRIMER
                         19
                              60.79
                                     57.89 4.00 1.00 11.00 CCCTTGTCGGCTCAAGTTC
                   2307
                   2539
                              58.45
                                     47.62 3.00 1.00 12.00 CAACTGTGTAAGCATCAAGCC
  RIGHT PRIMER
                         21
  PRODUCT SIZE: 233, PAIR ANY COMPL: 4.00, PAIR 3' COMPL: 2.00
4 LEFT PRIMER
                                     60.00 3.00 0.00 12.00 GTCGGCTCAAGTTCCCACTC
                   2312
                         20
                              62.16
```

58.45

PRODUCT SIZE: 228, PAIR ANY COMPL: 4.00, PAIR 3' COMPL: 2.00

RIGHT PRIMER

2539

21

47.62 3.00 1.00 12.00 CAACTGTGTAAGCATCAAGCC

3

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```
Statistics
                         in
                                          tm
                                                   high
                                                        high
                                                              high
                                                                         high
        con
             too
                    in
                                    no
                                               tm
                                                                    poly
        sid
            many
                   tar
                        excl
                              bad
                                    GC
                                         too
                                               too
                                                           3'
                                                               lib
                                                                          end
                                                    any
                              GC% clamp
       ered
              Ns
                   get
                        reg
                                         low
                                             high compl compl
                                                               sim
                                                                      Χ
                                                                         stab
                                                                                ok
Left
        226
               0
                                          32
                                               112
                                                                 3
                                                                     13
                                                                                 42
                     0
                          0
                                0
                                    24
                                                      0
                                                           0
                     0
                          0
                                9
                                    19
                                                      0
                                                                 1
                                                                      a
                                                                                 15
Right
        182
              23
                                         111
                                                4
                                                           a
Pair Stats:
considered 15, unacceptable product size 10, ok 5
primer3 release 1.1.1
Exon3: 177 bp
OLIGO
                                                3' rep seq
                              tm
LEFT PRIMER
                                              2.00 11.00 CTGGCATCTGCAGCACTC
               12160
                           59.19
                                  61.11
                                        6.00
               12462
                      20
                           59.16
                                  40.00 6.00 2.00 12.00 CTGGTGCAAAATTTCAATCG
RIGHT PRIMER
PRODUCT SIZE: 303, PAIR ANY COMPL: 5.00, PAIR 3' COMPL: 1.00
TARGETS (start, len)*: 12188,247
12120 GAAGGGCACCTGGCAGAGGGGCCTACTCTCTGCGGCCCAGCTGGCATCTGCAGCACTCCT
                                          12180 CATTTGTAACCCAGTCTCTGCTGTTTTGCCCATGTCTTCCACAGCCCAGCTTCCAAGAAGA
            12240 ATGCAAGTTCAGAGAAACCCTCCTGCCCAACAATTACAATGCCTACGAGTCAGNCTTGTA
     12300 CCAAGGGACCTACATTGCCCTGAGCAAATACGGACGGGTAAAGCGGGGCAGCAAGGTGTC
     12360 CCCGATCATGACTGTCACTCATTTCCTTCCCAGGATCTAAGGACCCACAAAAGAAGGCTN
     12420 ACAGATTTAAAGCATCATCTGTTCGATTGAAATTTTGCACCAGCGAAGAATTCCCCTTGC
     XXXXXXXXXXXXX
                          <<<<<<<<<
12480 CCTCCATGGCTTCTGAATCAGGCTTATCCTGTGGTTGGGGAGACCTCAGTTGTTTTCCTT
ADDITIONAL OLIGOS
                  start len
                                 tm
                                       gc%
                                             any
                                                        rep sea
1 LEFT PRIMER
                              60.27
                                     64.71 6.00 3.00 11.00 GCTGGCATCTGCAGCAC
                  12159
                         17
  RIGHT PRIMER
                  12462
                         20
                              59.16
                                     40.00
                                           6.00 2.00 12.00 CTGGTGCAAAATTTCAATCG
  PRODUCT SIZE: 304, PAIR ANY COMPL: 5.00, PAIR 3' COMPL: 1.00
 2 LEFT PRIMER
                                     61.11 6.00 3.00 11.00 AGCTGGCATCTGCAGCAC
                  12158
                         18
                              61.35
                         20
                                     40.00 6.00 2.00 12.00 CTGGTGCAAAATTTCAATCG
  RIGHT PRIMER
                  12462
                              59.16
  PRODUCT SIZE: 305, PAIR ANY COMPL: 5.00, PAIR 3' COMPL: 1.00
 3 LEFT PRIMER
                  12160
                         18
                              59.19
                                     61.11 6.00 2.00 11.00 CTGGCATCTGCAGCACTC
  RIGHT PRIMER
                  12463
                         20
                              58.21
                                     40.00 6.00 3.00 12.00 GCTGGTGCAAAATTTCAATC
  PRODUCT SIZE: 304, PAIR ANY COMPL: 5.00, PAIR 3' COMPL: 1.00
 4 LEFT PRIMER
                  12163
                         18
                              58.07
                                     61.11 6.00 1.00 12.00 GCATCTGCAGCACTCCTC
                                     40.00
                                            6.00 2.00 12.00 CTGGTGCAAAATTTCAATCG
  RIGHT PRIMER
                  12462
                          20
                              59.16
  PRODUCT SIZE: 300, PAIR ANY COMPL: 5.00, PAIR 3' COMPL: 1.00
Statistics
                    in
                         in
                                          tm
                                                              high
                                                                         high
             too
                                    no
                                               tm
                                                   high
                                                        high
        con
                                                          3'
                                    GC
                                                                    poly
        sid
                        excl
                              bad
                                         too
                                                               lib
                                                                          end
            many
                   tar
                                               too
                                                    any
       ered
              Ns
                   get
                        reg
                              GC% clamp
                                         low
                                             high compl compl
                                                               sim
                                                                      Х
                                                                         stab
                                                                                 ok
```

22

Left

338

270

30

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Right 278 0 0 0 28 36 162 0 3 0 0 49

Pair Stats:

considered 300, unacceptable product size 293, high end compl 1, ok 6 primer3 release 1.1.1

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