Gene: ABL1 - Sequence: NG_012034.1
Transcript: NM_005157.4 - Protein: NP_005148.2
Date : February 23, 2015

1st line: Base numbering. Full stops for intronic +/- 5, 10, 15...
2nd line: Base sequence. lower case Introns, upper case Exons
3rd line: Amino acid sequence. Printed on MIDDLE base of codon
4th line: Amino acid numbering. Numbered on 1st and increments of 10

Exon 2 | Start: 126564 | End: 126645 | Length: 81

```
    |1        |11       |21       |31       |41       |51
AAAATGTTGGAGATCTGCCTGAAGCTGGTGGGCTGCAAATCCAAGAAGGGGCTGTCCTCG
   M  L  E  I  C  L  K  L  V  G  C  K  S  K  K  G  L  S  S
   |1                                |11
```

```
    |61       |71
TCCTCCAGCTGTTATCTGGAAG
    |21
```

Exon 3 | Start: 145184 | End: 145357 | Length: 173

```
 |81       |91       |101      |111      |121      |131
AAGCCCTTCAGCGGCCAGTAGCATCTGACTTTGAGCCTCAGGGTCTGAGTGAAGCCGCTC
  A  L  Q  R  P  V  A  S  D  F  E  P  Q  G  L  S  E  A  A  R
          |31                             |41
```

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 |141      |151      |161      |171      |181      |191
GTTGGAACTCCAAGGAAAACCTTCTCGCTGGACCCAGTGAAAATGACCCCAACCTTTTCG
  W  N  S  K  E  N  L  L  A  G  P  S  E  N  D  P  N  L  F  V
          |51                             |61
```

```
 |201      |211      |221      |231      |241      |251
TTGCACTGTATGATTTTGTGGCCAGTGGAGATAACACTCTAAGCATAACTAAAG
          |71                             |81
```

Exon 4 | Start: 145921 | End: 146216 | Length: 295

```
      |261      |271      |281      |291      |301      |311
GTGAAAAGCTCCGGGTCTTAGGCTATAATCACAATGGGGAATGGTGTGAAGCCCAAACCA
  E  K  L  R  V  L  G  Y  N  H  N  G  E  W  C  E  A  Q  T  K
             |91                             |101
```

```
    |321       |331       |341       |351       |361       |371
AAAATGGCCAAGGCTGGGTCCCAAGCAACTACATCACGCCAGTCAACAGTCTGGAGAAAC
  N  G  Q  G  W  V  P  S  N  Y  I  T  P  V  N  S  L  E  K  H
              |111                                  |121

    |381       |391       |401       |411       |421       |431
ACTCCTGGTACCATGGGCCTGTGTCCCGCAATGCCGCTGAGTATCTGCTGAGCAGCGGGA
  S  W  Y  H  G  P  V  S  R  N  A  A  E  Y  L  L  S  S  G  I
              |131                                  |141

    |441       |451       |461       |471       |481       |491
TCAATGGCAGCTTCTTGGTGCGTGAGAGTGAGAGCAGTCCTGGCCAGAGGTCCATCTCGC
  N  G  S  F  L  V  R  E  S  E  S  S  P  G  Q  R  S  I  S  L
              |151                                  |161

    |501       |511       |521       |531       |541
TGAGATACGAAGGGAGGGTGTACCATTACAGGATCAACACTGCTTCTGATGGCAAG
              |171                                  |181


Exon 5 | Start: 153883 | End: 154155 | Length: 272

 |551       |561       |571       |581       |591       |601
CTCTACGTCTCCTCCGAGAGCCGCTTCAACACCCTGGCCGAGTTGGTTCATCATCATTCA
L  Y  V  S  S  E  S  R  F  N  T  L  A  E  L  V  H  H  S
                        |191                                  |201

 |611       |621       |631       |641       |651       |661
ACGGTGGCCGACGGGCTCATCACCACGCTCCATTATCCAGCCCCAAAGCGCAACAAGCCC
T  V  A  D  G  L  I  T  T  L  H  Y  P  A  P  K  R  N  K  P
                        |211                                  |221

 |671       |681       |691       |701       |711       |721
ACTGTCTATGGTGTGTCCCCCAACTACGACAAGTGGGAGATGGAACGCACGGACATCACC
T  V  Y  G  V  S  P  N  Y  D  K  W  E  M  E  R  T  D  I  T
                        |231                                  |241

 |731       |741       |751       |761       |771       |781
ATGAAGCACAAGCTGGGCGGGGGCCAGTACGGGGAGGTGTACGAGGGCGTGTGGAAGAAA
M  K  H  K  L  G  G  G  Q  Y  G  E  V  Y  E  G  V  W  K  K
                        |251                                  |261

 |791       |801       |811       |821
TACAGCCTGACGGTGGCCGTGAAGACCTTGAAG
                        |271
```

2

Exon 6 | Start: 163249 | End: 163333 | Length: 84

```
        |831       |841       |851       |861       |871       |881
GAGGACACCATGGAGGTGGAAGAGTTCTTGAAAGAAGCTGCAGTCATGAAAGAGATCAAA
 E   D   T   M   E   V   E   E   F   L   K   E   A   A   V   M   K   E   I   K
                |281                                   |291
```

```
        |891       |901
CACCCTAACCTGGTGCAGCTCCTTG
                |301
```


Exon 7 | Start: 163980 | End: 164157 | Length: 177

```
  |911       |921       |931       |941       |951       |961
GGGTCTGCACCCGGGAGCCCCCGTTCTATATCATCACTGAGTTCATGACCTACGGGAACC
  V   C   T   R   E   P   P   F   Y   I   I   T   E   F   M   T   Y   G   N   L
                          |311                                 |321
```

```
  |971       |981       |991       |1001      |1011      |1021
TCCTGGACTACCTGAGGGAGTGCAACCGGCAGGAGGTGAACGCCGTGGTGCTGCTGTACA
  L   D   Y   L   R   E   C   N   R   Q   E   V   N   A   V   V   L   L   Y   M
                          |331                                 |341
```

```
  |1031      |1041      |1051      |1061      |1071      |1081
TGGCCACTCAGATCTCGTCAGCCATGGAGTACCTGGAGAAGAAAAACTTCATCCACAG
                          |351                                 |361
```


Exon 8 | Start: 165988 | End: 166172 | Length: 184

```
      |1091      |1101      |1111      |1121      |1131      |1141
AGATCTTGCTGCCCGAAACTGCCTGGTAGGGGAGAACCACTTGGTGAAGGTAGCTGATTT
  D   L   A   A   R   N   C   L   V   G   E   N   H   L   V   K   V   A   D   F
                          |371                                 |381
```

```
      |1151      |1161      |1171      |1181      |1191      |1201
TGGCCTGAGCAGGTTGATGACAGGGGACACCTACACAGCCCATGCTGGAGCCAAGTTCCC
  G   L   S   R   L   M   T   G   D   T   Y   T   A   H   A   G   A   K   F   P
                          |391                                 |401
```

```
      |1211      |1221      |1231      |1241      |1251      |1261
CATCAAATGGACTGCACCCGAGAGCCTGGCCTACAACAAGTTCTCCATCAAGTCCGACGT
  I   K   W   T   A   P   E   S   L   A   Y   N   K   F   S   I   K   S   D   V
```

3

CTGGG

Exon 9 | Start: 169535 | End: 169687 | Length: 152

|1271 |1281 |1291 |1301 |1311 |1321
CATTTGGAGTATTGCTTTGGGAAATTGCTACCTATGGCATGTCCCCTTACCCGGGAATTG
  F G V L L W E I A T Y G M S P Y P G I D
                        |431 |441

|1331 |1341 |1351 |1361 |1371 |1381
ACCTGTCCCAGGTGTATGAGCTGCTAGAGAAGGACTACCGCATGGAGCGCCCAGAAGGCT
  L S Q V Y E L L E K D Y R M E R P E G C
                        |451 |461

|1391 |1401 |1411 |1421
GCCCAGAGAAGGTCTATGAACTCATGCGAGCAT
                  |471

Exon 10 | Start: 171188 | End: 171277 | Length: 89

        |1431 |1441 |1451 |1461 |1471 |1481
GTTGGCAGTGGAATCCCTCTGACCGGCCCTCCTTTGCTGAAATCCACCAAGCCTTTGAAA
  W Q W N P S D R P S F A E I H Q A F E T
                        |481 |491

        |1491 |1501 |1511
CAATGTTCCAGGAATCCAGTATCTCAGACG
                  |501

Exon 11 | Start: 171620 | End: 171784 | Length: 164

        |1521 |1531 |1541 |1551 |1561 |1571
AAGTGGAAAAGGAGCTGGGGAAACAAGGCGTCCGTGGGGCTGTGAGTACCTTGCTGCAGG
  V E K E L G K Q G V R G A V S T L L Q A
                        |511 |521

        |1581 |1591 |1601 |1611 |1621 |1631
CCCCAGAGCTGCCCACCAAGACGAGGACCTCCAGGAGAGCTGCAGAGCACAGAGACACCA
  P E L P T K T R T S R R A A E H R D T T

4

```
       |1641        |1651        |1661        |1671
CTGACGTGCCTGAGATGCCTCACTCCAAGGGCCAGGGAGAGAGCG
                  |551
```

Exon 12 | Start: 175089 | End: 178795 | Length: 3706

```
   |1681        |1691        |1701        |1711        |1721        |1731
ATCCTCTGGACCATGAGCCTGCCGTGTCTCCATTGCTCCCTCGAAAAGAGCGAGGTCCCC
  P   L   D   H   E   P   A   V   S   P   L   L   P   R   K   E   R   G   P   P
  |561                                          |571
```

```
   |1741        |1751        |1761        |1771        |1781        |1791
CGGAGGGCGGCCTGAATGAAGATGAGCGCCTTCTCCCCAAAGACAAAAAGACCAACTTGT
  E   G   G   L   N   E   D   E   R   L   L   P   K   D   K   K   T   N   L   F
  |581                                          |591
```

```
   |1801        |1811        |1821        |1831        |1841        |1851
TCAGCGCCTTGATCAAGAAGAAGAAGAAGACAGCCCCAACCCCTCCCAAACGCAGCAGCT
  S   A   L   I   K   K   K   K   T   A   P   T   P   P   K   R   S   S
  |601                                          |611
```

```
   |1861        |1871        |1881        |1891        |1901        |1911
CCTTCCGGGAGATGGACGGCCAGCCGGAGCGCAGAGGGGCCGGCGAGGAAGAGGGCCGAG
  F   R   E   M   D   G   Q   P   E   R   R   G   A   G   E   E   E   G   R   D
  |621                                          |631
```

```
   |1921        |1931        |1941        |1951        |1961        |1971
ACATCAGCAACGGGGCACTGGCTTTCACCCCCTTGGACACAGCTGACCCAGCCAAGTCCC
  I   S   N   G   A   L   A   F   T   P   L   D   T   A   D   P   A   K   S   P
  |641                                          |651
```

```
   |1981        |1991        |2001        |2011        |2021        |2031
CAAAGCCCAGCAATGGGGCTGGGGTCCCCAATGGAGCCCTCCGGGAGTCCGGGGGGCTCAG
  K   P   S   N   G   A   G   V   P   N   G   A   L   R   E   S   G   G   S   G
  |661                                          |671
```

```
   |2041        |2051        |2061        |2071        |2081        |2091
GCTTCCGGTCTCCCCACCTGTGGAAGAAGTCCAGCACGCTGACCAGCAGCCGCCTAGCCA
  F   R   S   P   H   L   W   K   K   S   S   T   L   T   S   S   R   L   A   T
  |681                                          |691
```

```
   |2101        |2111        |2121        |2131        |2141        |2151
CCGGCGAGGAGGAGGGCGGTGGCAGCTCCAGCAAGCGCTTCCTGCGCTCTTGCTCCGCCT
```

5

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    G   E   E   E   G   G   G   S   S   S   K   R   F   L   R   S   C   S   A   S
    |701                                            |711

    |2161      |2171      |2181      |2191      |2201      |2211
CCTGCGTTCCCCATGGGGCCAAGGACACGGAGTGGAGGTCAGTCACGCTGCCTCGGGACT
    C   V   P   H   G   A   K   D   T   E   W   R   S   V   T   L   P   R   D   L
    |721                                            |731

    |2221      |2231      |2241      |2251      |2261      |2271
TGCAGTCCACGGGAAGACAGTTTGACTCGTCCACATTTGGAGGGCACAAAAGTGAGAAGC
    Q   S   T   G   R   Q   F   D   S   S   T   F   G   G   H   K   S   E   K   P
    |741                                            |751

    |2281      |2291      |2301      |2311      |2321      |2331
CGGCTCTGCCTCGGAAGAGGGCAGGGGAGAACAGGTCTGACCAGGTGACCCGAGGCACAG
    A   L   P   R   K   R   A   G   E   N   R   S   D   Q   V   T   R   G   T   V
    |761                                            |771

    |2341      |2351      |2361      |2371      |2381      |2391
TAACGCCTCCCCCCAGGCTGGTGAAAAAGAATGAGGAAGCTGCTGATGAGGTCTTCAAAG
    T   P   P   P   R   L   V   K   K   N   E   E   A   A   D   E   V   F   K   D
    |781                                            |791

    |2401      |2411      |2421      |2431      |2441      |2451
ACATCATGGAGTCCAGCCCGGGCTCCAGCCCGCCCAACCTGACTCCAAAACCCCTCCGGC
    I   M   E   S   S   P   G   S   S   P   P   N   L   T   P   K   P   L   R   R
    |801                                            |811

    |2461      |2471      |2481      |2491      |2501      |2511
GGCAGGTCACCGTGGCCCCTGCCTCGGGCCTCCCCCACAAGGAAGAAGCTGGAAAGGGCA
    Q   V   T   V   A   P   A   S   G   L   P   H   K   E   E   A   G   K   G   S
    |821                                            |831

    |2521      |2531      |2541      |2551      |2561      |2571
GTGCCTTAGGGACCCCTGCTGCAGCTGAGCCAGTGACCCCCACCAGCAAAGCAGGCTCAG
    A   L   G   T   P   A   A   A   E   P   V   T   P   T   S   K   A   G   S   G
    |841                                            |851

    |2581      |2591      |2601      |2611      |2621      |2631
GTGCACCAGGGGGCACCAGCAAGGGCCCCGCCGAGGAGTCCAGAGTGAGGAGGCACAAGC
    A   P   G   G   T   S   K   G   P   A   E   E   S   R   V   R   R   H   K   H
    |861                                            |871

    |2641      |2651      |2661      |2671      |2681      |2691
ACTCCTCTGAGTCGCCAGGGAGGGACAAGGGGAAATTGTCCAGGCTCAAACCTGCCCCGC
    S   S   E   S   P   G   R   D   K   G   K   L   S   R   L   K   P   A   P   P
```

6

```
|881                          |891

|2701      |2711      |2721      |2731      |2741      |2751
CGCCCCCACCAGCAGCCTCTGCAGGGAAGGCTGGAGGAAAGCCCTCGCAGAGCCCGAGCC
  P   P   P   A   A   S   A   G   K   A   G   G   K   P   S   Q   S   P   S   Q
|901                          |911

|2761      |2771      |2781      |2791      |2801      |2811
AGGAGGCGGCCGGGGAGGCAGTCCTGGGCGCAAAGACAAAAGCCACGAGTCTGGTTGATG
  E   A   A   G   E   A   V   L   G   A   K   T   K   A   T   S   L   V   D   A
|921                          |931

|2821      |2831      |2841      |2851      |2861      |2871
CTGTGAACAGTGACGCTGCCAAGCCCAGCCAGCCGGGAGAGGGCCTCAAAAAGCCCGTGC
  V   N   S   D   A   A   K   P   S   Q   P   G   E   G   L   K   K   P   V   L
|941                          |951

|2881      |2891      |2901      |2911      |2921      |2931
TCCCGGCCACTCCAAAGCCACAGTCCGCCAAGCCGTCGGGGACCCCCATCAGCCCAGCCC
  P   A   T   P   K   P   Q   S   A   K   P   S   G   T   P   I   S   P   A   P
|961                          |971

|2941      |2951      |2961      |2971      |2981      |2991
CCGTTCCCTCCACGTTGCCATCAGCATCCTCGGCCCTGGCAGGGGACCAGCCGTCTTCCA
  V   P   S   T   L   P   S   A   S   S   A   L   A   G   D   Q   P   S   S   T
|981                          |991

|3001      |3011      |3021      |3031      |3041      |3051
CCGCCTTCATCCCTCTCATATCAACCCGAGTGTCTCTTCGGAAAAACCCGCCAGCCTCCAG
  A   F   I   P   L   I   S   T   R   V   S   L   R   K   T   R   Q   P   P   E
|1001                          |1011

|3061      |3071      |3081      |3091      |3101      |3111
AGCGGATCGCCAGCGGCGCCATCACCAAGGGCGTGGTCCTGGACAGCACCGAGGCGCTGT
  R   I   A   S   G   A   I   T   K   G   V   V   L   D   S   T   E   A   L   C
|1021                          |1031

|3121      |3131      |3141      |3151      |3161      |3171
GCCTCGCCATCTCTAGGAACTCCGAGCAGATGGCCAGCCACAGCGCAGTGCTGGAGGCCG
  L   A   I   S   R   N   S   E   Q   M   A   S   H   S   A   V   L   E   A   G
|1041                          |1051

|3181      |3191      |3201      |3211      |3221      |3231
GCAAAAAACCTCTACACGTTCTGCGTGAGCTATGTGGATTCCATCCAGCAAATGAGGAACA
  K   N   L   Y   T   F   C   V   S   Y   V   D   S   I   Q   Q   M   R   N   K
|1061                          |1071
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     |3241      |3251      |3261      |3271      |3281      |3291
AGTTTGCCTTCCGAGAGGCCATCAACAAACTGGAGAATAATCTCCGGGAGCTTCAGATCT
  F   A   F   R   E   A   I   N   K   L   E   N   N   L   R   E   L   Q   I   C
  |1081                                |1091


     |3301      |3311      |3321      |3331      |3341      |3351
GCCCGGCGACAGCAGGCAGTGGTCCAGCGGCCACTCAGGACTTCAGCAAGCTCCTCAGTT
  P   A   T   A   G   S   G   P   A   A   T   Q   D   F   S   K   L   L   S   S
  |1101                                |1111


     |3361      |3371      |3381      |3391      |*11       |*21
CGGTGAAGGAAATCAGTGACATAGTGCAGAGGTAGCAGCAGTCAGGGGTCAGGTGTCAGG
  V   K   E   I   S   D   I   V   Q   R   *
  |1121                                |1131


     |*31       |*41       |*51       |*61       |*71       |*81
CCCGTCGGAGCTGCCTGCAGCACATGCGGGCTCGCCCATACCCGTGACAGTGGCTGACAA


     |*91       |*101      |*111      |*121      |*131      |*141
GGGACTAGTGAGTCAGCACCTTGGCCCAGGAGCTCTGCGCCAGGCAGAGCTGAGGGCCCT


     |*151      |*161      |*171      |*181      |*191      |*201
GTGGAGTCCAGCTCTACTACCTACGTTTGCACCGCCTGCCCTCCCGCACCTTCCTCCTCC


     |*211      |*221      |*231      |*241      |*251      |*261
CCGCTCCGTCTCTGTCCTCGAATTTTATCTGTGGAGTTCCTGCTCCGTGGACTGCAGTCG


     |*271      |*281      |*291      |*301      |*311      |*321
GCATGCCAGGACCCGCCAGCCCCGCTCCCACCTAGTGCCCCAGACTGAGCTCTCCAGGCC


     |*331      |*341      |*351      |*361      |*371      |*381
AGGTGGGAACGGCTGATGTGGACTGTCTTTTTCATTTTTTTCTCTCTGGAGCCCCTCCTC


     |*391      |*401      |*411      |*421      |*431      |*441
CCCCGGCTGGGCCTCCTTCTTCCACTTCTCCAAGAATGGAAGCCTGAACTGAGGCCTTGT


     |*451      |*461      |*471      |*481      |*491      |*501
GTGTCAGGCCCTCTGCCTGCACTCCCTGGCCTTGCCCGTCGTGTGCTGAAGACATGTTTC


     |*511      |*521      |*531      |*541      |*551      |*561
AAGAACCGCATTTCGGGAAGGGCATGCACGGGCATGCACACGGCTGGTCACTCTGCCCTC


     |*571      |*581      |*591      |*601      |*611      |*621
TGCTGCTGCCCGGGGTGGGGTGCACTCGCCATTTCCTCACGTGCAGGACAGCTCTTGATT
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     |*631      |*641      |*651      |*661      |*671      |*681
TGGGTGGAAAACAGGGTGCTAAAGCCAACCAGCCTTTGGGTCCTGGGCAGGTGGGAGCTG

     |*691      |*701      |*711      |*721      |*731      |*741
AAAAGGATCGAGGCATGGGGCATGTCCTTTCCATCTGTCCACATCCCCAGAGCCCAGCTC

     |*751      |*761      |*771      |*781      |*791      |*801
TTGCTCTCTTGTGACGTGCACTGTGAATCCTGGCAAGAAAGCTTGAGTCTCAAGGGTGGC

     |*811      |*821      |*831      |*841      |*851      |*861
AGGTCACTGTCACTGCCGACATCCCTCCCCCAGCAGAATGGAGGCAGGGGACAAGGGAGG

     |*871      |*881      |*891      |*901      |*911      |*921
CAGTGGCTAGTGGGGTGAACAGCTGGTGCCAAATAGCCCCAGACTGGGCCCAGGCAGGTC

     |*931      |*941      |*951      |*961      |*971      |*981
TGCAAGGGCCCAGAGTGAACCGTCCTTTCACACATCTGGGTGCCCTGAAAGGGCCCTTCC

     |*991      |*1001     |*1011     |*1021     |*1031     |*1041
CCTCCCCCACTCCTCTAAGACAAAGTAGATTCTTACAAGGCCCTTTCCTTTGGAACAAGA

     |*1051     |*1061     |*1071     |*1081     |*1091     |*1101
CAGCCTTCACTTTTCTGAGTTCTTGAAGCATTTCAAAGCCCTGCCTCTGTGTAGCCGCCC

     |*1111     |*1121     |*1131     |*1141     |*1151     |*1161
TGAGAGAGAATAGAGCTGCCACTGGGCACCTGCGCACAGGTGGGAGGAAAGGGCCTGGCC

     |*1171     |*1181     |*1191     |*1201     |*1211     |*1221
AGTCCTGGTCCTGGCTGCACTCTTGAACTGGGCGAATGTCTTATTTAATTACCGTGAGTG

     |*1231     |*1241     |*1251     |*1261     |*1271     |*1281
ACATAGCCTCATGTTCTGTGGGGGTCATCAGGGAGGGTTAGGAAAACCACAAACGGAGCC

     |*1291     |*1301     |*1311     |*1321     |*1331     |*1341
CCTGAAAGCCTCACGTATTTCACAGAGCACGCCTGCCATCTTCTCCCCGAGGCTGCCCCA

     |*1351     |*1361     |*1371     |*1381     |*1391     |*1401
GGCCGGAGCCCAGATACGGGGGGCTGTGACTCTGGGCAGGGACCCGGGGTCTCCTGGACCT

     |*1411     |*1421     |*1431     |*1441     |*1451     |*1461
TGACAGAGCAGCTAACTCCGAGAGCAGTGGGCAGGTGGCCGCCCCTGAGGCTTCACGCCG

     |*1471     |*1481     |*1491     |*1501     |*1511     |*1521
GGAGAAGCCACCTTCCCACCCCTTCATACCGCCTCGTGCCAGCAGCCTCGCACAGGCCCT

     |*1531     |*1541     |*1551     |*1561     |*1571     |*1581
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AGCTTTACGCTCATCACCTAAACTTGTACTTTATTTTTCTGATAGAAATGGTTTCCTCTG

        |*1591     |*1601     |*1611     |*1621     |*1631     |*1641
GATCGTTTTATGCGGTTCTTACAGCACATCACCTCTTTGCCCCCGACGGCTGTGACGCAG

        |*1651     |*1661     |*1671     |*1681     |*1691     |*1701
CCGGAGGGAGGCACTAGTCACCGACAGCGGCCTTGAAGACAGAGCAAAGCGCCCACCCAG

        |*1711     |*1721     |*1731     |*1741     |*1751     |*1761
GTCCCCCGACTGCCTGTCTCCATGAGGTACTGGTCCCTTCCTTTTGTTAACGTGATGTGC

        |*1771     |*1781     |*1791     |*1801     |*1811     |*1821
CACTATATTTTACACGTATCTCTTGGTATGCATCTTTTATAGACGCTCTTTTCTAAGTGG

        |*1831     |*1841     |*1851     |*1861     |*1871     |*1881
CGTGTGCATAGCGTCCTGCCCTGCCCCCTCGGGGGCCTGTGGTGGCTCCCCCTCTGCTTC

        |*1891     |*1901     |*1911     |*1921     |*1931     |*1941
TCGGGGTCCAGTGCATTTTGTTTCTGTATATGATTCTCTGTGGTTTTTTTTGAATCCAAA

        |*1951     |*1961     |*1971     |*1981     |*1991
TCTGTCCTCTGTAGTATTTTTTAAATAAATCAGTGTTTACATTAGAA
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