Gene: PALB2 - Sequence: NG_007406.1
Transcript: NM_024675.3 - Protein: NP_078951.2
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 FIRST base of codon
4th line: Amino acid numbering. Numbered on 1st and increments of 10

Exon 1 | Start: 5001 | End: 5248 | Length: 247

```
  .    .    .    .    .    .    .    .    .    .    .    .
aacgccgaccaggcctcaaagggacgcagggttggaaagaggaggatacatatctggacc

  .    .    .    .    .    .    .    .    .    .    .    .
cgcgcaccgtctcgatgtactcagacttgttgtagagcagctcgcccaactccatggccg

  .    .    .    .    .    .    .    .    .    .    .    .
ccgcctccttccctcagccccggatcctgtcagagtcagtcggtcagtctttcagagatt

  .    .    .    .    .    .    .    .    .    .    .    .
ccggctacttccggccgctcctccacttccgctccaggtggcccactgggactcatcgac

  .    .    .    .    .    .    .    .    .    .    .    .
agcgcggctctcctttaggcggcctcgctccactgctcggccgtctacggctgcgcgtgc

  |-199      |-189      |-179      |-169      |-159      |-149
GCAGGCCGAATGGTGGATTTAATTGGCCGGAGTTTAGGGCGCGCTTGGCCCGCGTGGGTC

  |-139      |-129      |-119      |-109      |-99       |-89
AGCTGATCGCGCACTGAGGGTGCGATCCCGGGCTCCCCATTCCTTCCTGGGGCGCCTCCC

  |-79       |-69       |-59       |-49       |-39       |-29
CGGCCCAGGGCCAACTGGGTCCCGGTGTCGGCAGGCCTGGGGTCGGCGACGGCTGCTCTT

  |-19       |-9        |1         |11        |21        |31
TTCGTTCTGTCGCCTGCCCGATGGACGAGCCTCCCGGGAAGCCCCTCAGCTGTGAGGAGA
                      M   D   E   P   P   G   K   P   L   S   C   E   E   K
                      |1                                          |11

|41         .    .    .    .    .    .    .    .    .    .
AGGAAAAGgtgccggggggtgcgggaagggcggacgcaggactctgaccccgctttcccag
  E   K
```

1

```
       .         .         .         .         .         .         .         .         .         .         .         .
    ggttttaggcctggctttgtgtcctcggcagtccgagggcagcagtatcatctgaccacc

       .         .         .         .         .         .         .         .         .         .         .         .
    ccctcctcttagggctgaggggggcacagaaaatgaaaatgtggaaatagcgtggtgctca

       .         .         .         .         .         .         .         .         .         .         .         .
    cgtggtggcgtttaaagaacaaatttcattacagtagcagcgcattaatacaatgtgtaa

       .         .         .         .         .         .         .         .         .         .         .         .
    cagtttgtagataaagctgtatcgacacccttgctcctccccccctcccacaccctcaatc

       .         .
    tttacttc



    Exon 2 | Start: 8229 | End: 8288 | Length: 59
    BE AWARE: Flanking intron is shared with the following exon

       .         .         .         .         .         .         .         .         .         .         .
    gtctaacctagatttggagaaggacctagaagtctatcccagggaaataaaaatctaagc

       .         .         .         .         .         .         .         .         .         .         .
    taaggtttgaggaatcagtaggaattggcaaaggaaggacatgttccagatgataggaac

       .         .         .         .         .         .         .         .         .         .         .
    aggttatgcaaagatcctgaaatggtcagagcttggtgctttttgagaaccaaaagtaga

       .         .         .         .         .         .         .         .         .         .         .
    ttgttatggaccagtgctactccctgcctcttgccaagggaccccgccaagcactgcatc

       .         .         .         .         .         .         .         .         .         .         .
    ccttccctctgactccacctttccacttgcccagtattgttggtgtttttcttcttccag

     |51        |61        |71        |81        |91        |101
    TTAAAGGAGAAATTAGCATTCTTGAAAAGGGAATACAGCAAGACACTAGCCCGCCTTCAG
    L   K   E   K   L   A   F   L   K   R   E   Y   S   K   T   L   A   R   L   Q
            |21                                        |31

       .         .         .         .         .         .         .         .         .         .         .
    gtaagtgaatcgtattctcaaattaaggtgttatagtacaaacaatttaaaaacagtt
```

2

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Exon 3 | Start: 8406 | End: 8508 | Length: 102
BE AWARE: Flanking intron is shared with the previous exon


  .    .    .    .    .    .    .    .    .    .    .    .    .
cttgactctataaaactttaaagaaaacgtatttctggggctgttttttgtctcctctagC
                                                            R


 |111      |121      |131      |141      |151      |161
GTGCCCAAAGAGCTGAAAAGATTAAGCATTCTATTAAGAAAACAGTAGAAGAACAAGATT
  A  Q  R  A  E  K  I  K  H  S  I  K  K  T  V  E  E  Q  D  C
          |41                           |51

 |171      |181      |191      |201      |211 .    .    .
GTTTGTCTCAGCAGGATCTCTCACCGCAGCTAAAACACTCAGgtaaatctagaccattca
  L  S  Q  Q  D  L  S  P  Q  L  K  H  S  E
          |61                           |71


  .    .    .    .    .    .    .    .    .    .    .    .    .
cttatgcctgctttattattcatttcccaggtatattttggctattgttctttttcccac

  .    .    .    .    .    .    .    .    .    .    .    .    .
agtgtgaagataatgactagcaatagacgctttaattttaattttaattttaattttatt

  .    .    .    .    .    .    .    .    .    .    .    .    .
tttttgagacagagtctcactctttgttacccaggctggagtgcagtggcacaatcttgg

  .    .    .    .    .    .    .    .    .    .    .    .    .
ctcactacaacctccaactcccaggctcaagtgattctcgtgcctcagcctcctgagtag

  .    .    .    .    .    .    .    .    .
ctgggactacaggcacgtgcactaccacacctgactaattgt



Exon 4 | Start: 10024 | End: 11496 | Length: 1472

  .    .    .    .    .    .    .    .    .    .    .    .    .
tcagaacttttaaaaatatgtacagtatggagtatgtacagttcctttacatactccatc

  .    .    .    .    .    .    .    .    .    .    .    .    .
agatagtagaagtagtcaacaccttgaacacattcctcctaaaggtaacagtgaccttac

  .    .    .    .    .    .    .    .    .    .    .    .    .
tactcacagcctaaaaaataggtttatttcacctgtaaattcatctgcctgaatgaaatg
```

3

```
        .         .         .         .         .         .         .
tcactgattctttcttaaataaatgtttagtagtatttatatataataggttaaaaatga

        .         .         .         .         .         .         .
gtattttttgttttattttataagaaaaatataagttatatacattttttttcctcctcag

          |221       |231       |241       |251       |261       |271
AACCTAAAAATAAAATATGTGTTTATGACAAGTTACACATCAAAACCCATCTTGATGAAG
  P   K   N   K   I   C   V   Y   D   K   L   H   I   K   T   H   L   D   E   E
                                    |81                          |91

          |281       |291       |301       |311       |321       |331
AAACTGGAGAAAAGACATCTATCACACTTGATGTTGGGCCTGAGTCCTTTAACCCTGGAG
  T   G   E   K   T   S   I   T   L   D   V   G   P   E   S   F   N   P   G   D
                                    |101                         |111

          |341       |351       |361       |371       |381       |391
ATGGCCCAGGAGGATTACCTATACAAAGAACAGATGACACCCAAGAACATTTTCCCCACA
  G   P   G   G   L   P   I   Q   R   T   D   D   T   Q   E   H   F   P   H   R
                                    |121                         |131

          |401       |411       |421       |431       |441       |451
GGGTCAGTGACCCTAGTGGTGAGCAAAAGCAGAAGCTGCCAAGCAGAAGAAAGAAGCAGC
  V   S   D   P   S   G   E   Q   K   Q   K   L   P   S   R   R   K   K   Q   Q
                                    |141                         |151

          |461       |471       |481       |491       |501       |511
AGAAGAGGACATTTATTTCACAGGAGAGAGACTGTGTCTTTGGCACTGATTCACTCAGAT
  K   R   T   F   I   S   Q   E   R   D   C   V   F   G   T   D   S   L   R   L
                                    |161                         |171

          |521       |531       |541       |551       |561       |571
TGTCTGGGAAAAGACTAAAGGAACAGGAAGAAATCAGTAGCAAAAATCCTGCTAGATCAC
  S   G   K   R   L   K   E   Q   E   E   I   S   S   K   N   P   A   R   S   P
                                    |181                         |191

          |581       |591       |601       |611       |621       |631
CAGTAACTGAAATAAGAACTCACCTTTTAAGTCTTAAATCTGAACTTCCAGATTCTCCAG
  V   T   E   I   R   T   H   L   L   S   L   K   S   E   L   P   D   S   P   E
                                    |201                         |211

          |641       |651       |661       |671       |681       |691
AACCAGTTACAGAAATTAATGAAGACAGTGTATTAATTCCACCAACTGCCCAACCAGAAA
  P   V   T   E   I   N   E   D   S   V   L   I   P   P   T   A   Q   P   E   K
                                    |221                         |231
```

4

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      |701       |711       |721       |731       |741       |751
AAGGTGTTGATACATTCCTAAGAAGACCTAATTTCACCAGGGCGACTACAGTTCCTTTAC
   G  V  D  T  F  L  R  R  P  N  F  T  R  A  T  T  V  P  L  Q
                          |241                                |251


      |761       |771       |781       |791       |801       |811
AGACTCTATCAGATAGCGGTAGTAGTCAGCACCTTGAACACATTCCTCCTAAAGGTAGCA
   T  L  S  D  S  G  S  S  Q  H  L  E  H  I  P  P  K  G  S  S
                          |261                                |271


      |821       |831       |841       |851       |861       |871
GTGAACTTACTACTCACGACCTAAAAAAACATTAGATTTACTTCACCTGTAAGTTTGGAGG
   E  L  T  T  H  D  L  K  N  I  R  F  T  S  P  V  S  L  E  A
                          |281                                |291


      |881       |891       |901       |911       |921       |931
CACAAGGCAAAAAAATGACTGTCTCTACAGATAACCTCCTTGTAAATAAAGCTATAAGTA
   Q  G  K  K  M  T  V  S  T  D  N  L  L  V  N  K  A  I  S  K
                          |301                                |311


      |941       |951       |961       |971       |981       |991
AAAGTGGCCAACTGCCCACAAGTTCTAATTTAGAGGCAAATATTTCATGTTCTCTAAATG
   S  G  Q  L  P  T  S  S  N  L  E  A  N  I  S  C  S  L  N  E
                          |321                                |331


      |1001      |1011      |1021      |1031      |1041      |1051
AACTCACCTACAATAACTTACCAGCAAATGAAAACCAAAACTTAAAAGAACAAAATCAAA
   L  T  Y  N  N  L  P  A  N  E  N  Q  N  L  K  E  Q  N  Q  T
                          |341                                |351


      |1061      |1071      |1081      |1091      |1101      |1111
CAGAGAAATCTTTAAAATCTCCCAGTGACACTCTTGATGGCAGGAATGAAAATCTTCAGG
   E  K  S  L  K  S  P  S  D  T  L  D  G  R  N  E  N  L  Q  E
                          |361                                |371


      |1121      |1131      |1141      |1151      |1161      |1171
AAAGTGAGATTCTAAGTCAACCTAAGAGTCTTAGCCTGGAAGCAACCTCTCCTCTTTCTG
   S  E  I  L  S  Q  P  K  S  L  S  L  E  A  T  S  P  L  S  A
                          |381                                |391


      |1181      |1191      |1201      |1211      |1221      |1231
CAGAAAAACATTCTTGCACAGTGCCTGAAGGCCTTCTGTTTCCTGCAGAATATTATGTTA
   E  K  H  S  C  T  V  P  E  G  L  L  F  P  A  E  Y  Y  V  R
                          |401                                |411


      |1241      |1251      |1261      |1271      |1281      |1291
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5

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GAACAACACGAAGCATGTCCAATTGCCAGAGGAAAGTAGCCGTGGAGGCTGTCATTCAGA
  T  T  R  S  M  S  N  C  Q  R  K  V  A  V  E  A  V  I  Q  S
                                 |421                        |431

         |1301      |1311      |1321      |1331      |1341      |1351
GTCATTTGGATGTCAAGAAAAAAGGGTTTAAAAAATAAAAATAAGGATGCAAGTAAAAATT
  H  L  D  V  K  K  K  G  F  K  N  K  N  K  D  A  S  K  N  L
                                 |441                        |451

         |1361      |1371      |1381      |1391      |1401      |1411
TAAACCTTTCCAATGAGGAAACTGACCAAAGTGAAATTAGGATGTCTGGCACATGCACAG
  N  L  S  N  E  E  T  D  Q  S  E  I  R  M  S  G  T  C  T  G
                                 |461                        |471

         |1421      |1431      |1441      |1451      |1461      |1471
GACAACCAAGTTCAAGAACCTCTCAGAAACTTCTCTCATTAACTAAAGTCAGCTCTCCCG
  Q  P  S  S  R  T  S  Q  K  L  L  S  L  T  K  V  S  S  P  A
                                 |481                        |491

         |1481      |1491      |1501      |1511      |1521      |1531
CTGGGCCCACTGAAGATAATGACTTGTCTAGGAAGGCAGTTGCCCAAGCACCTGGTAGAA
  G  P  T  E  D  N  D  L  S  R  K  A  V  A  Q  A  P  G  R  R
                                 |501                        |511

         |1541      |1551      |1561      |1571      |1581      |1591
GATACACAGGAAAAAGAAAATCAGCCTGCACCCCAGCATCAGATCATTGTGAACCACTTT
  Y  T  G  K  R  K  S  A  C  T  P  A  S  D  H  C  E  P  L  L
                                 |521                        |531

         |1601      |1611      |1621      |1631      |1641      |1651
TGCCAACTTCTAGCCTGTCGATTGTTAACAGGTCCAAGGAAGAAGTCACCTCACACAAAT
  P  T  S  S  L  S  I  V  N  R  S  K  E  E  V  T  S  H  K  Y
                                 |541                        |551

         |1661      |1671      |1681      .         .         .         .         .
ATCAGCACGAAAAATTATTTATTCAAGTGAAAGgtaaatcaagatgtgtttgatgatgat
  Q  H  E  K  L  F  I  Q  V  K  G
                                 |561


     .         .         .         .         .         .         .         .         .         .
gatgatgatgatgaaagttaacaattactatttgcctggcacttccttttctttcttttc


     .         .         .         .         .         .         .         .         .         .
taaaaagtgacagggccaagtgtggtggcttacgtctgtaatcccagcactttgggaggc


     .         .         .         .         .         .         .         .         .         .
```

6

tgaggaacagagtgagaccctggctcaaaaaaatttaaataaataaataaataaataaat

   .   .   .   .

aaataaataaataaaaataaagagacaggggctcactgttgtccaggctggagtgccgtg

   .   .   .   .

gtgcagcctctatctcctgggctcaaatgttcc

Exon 5 | Start: 15889 | End: 16718 | Length: 829

.   .   .   .

tgaccgttgtttgaacccttcgcccaagtttctgagtcatggatgggaaaagtaatgaac

.   .   .   .

attttttagtatatttgagtttagaagctcactctttgttgggtattacatttaagaatg

.   .   .   .

gtttaacatgtttctttgataggacttcattgtaaacattaagttcattctggggaaatt

.   .   .   .

aaggttcattaaaatgtttcttttaaatctaggagatcctattctctttgtcatcagtga

.   .   .   .

aacagattgtctgttttgttgggttttgttactattttgtgacttattttttcttctttag

```
     |1691      |1701      |1711      |1721      |1731      |1741
GGAAGAAAAGTCGTCATCAAAAAGAGGATTCCCTTTCTTGGAGTAATAGTGCTTATTTAT
  K   K   S   R   H   Q   K   E   D   S   L   W   S   N   S   A   Y   L   S
                                   |571                             |581

     |1751      |1761      |1771      |1781      |1791      |1801
CCTTGGATGATGATGCTTTCACGGCTCCATTTCATAGGGATGGAATGCTGAGTTTAAAGC
  L   D   D   D   A   F   T   A   P   F   H   R   D   G   M   L   S   L   K   Q
                                   |591                             |601

     |1811      |1821      |1831      |1841      |1851      |1861
AACTACTGTCTTTTCTCAGTATCACAGACTTTCAGTTACCTGATGAAGACTTTGGACCTC
  L   L   S   F   L   S   I   T   D   F   Q   L   P   D   E   D   F   G   P   L
                                   |611                             |621

     |1871      |1881      |1891      |1901      |1911      |1921
TTAAGCTTGAAAAAGTGAAGTCCTGCTCAGAAAAACCAGTGGAGCCCTTTGAGTCAAAAA
  K   L   E   K   V   K   S   C   S   E   K   P   V   E   P   F   E   S   K   M
                                   |631                             |641
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       |1931      |1941      |1951      |1961      |1971      |1981
TGTTTGGAGAGAGACATCTTAAAGAGGGAAGCTGTATTTTTCCAGAGGAACTGAGTCCTA
  F  G  E  R  H  L  K  E  G  S  C  I  F  P  E  E  L  S  P  K
                           |651                            |661

       |1991      |2001      |2011      |2021      |2031      |2041
AACGCATGGATACAGAAATGGAGGACTTAGAAGAGGACCTTATTGTTCTACCAGGAAAAT
  R  M  D  T  E  M  E  D  L  E  E  D  L  I  V  L  P  G  K  S
                           |671                            |681

       |2051      |2061      |2071      |2081      |2091      |2101
CACATCCCAAAAGGCCAAACTCGCAAAGCCAGCATACAAAGACGGGCCTTTCTTCATCCA
  H  P  K  R  P  N  S  Q  S  Q  H  T  K  T  G  L  S  S  S  I
                           |691                            |701

       |2111      |2121      |2131      |2141      |2151      |2161
TATTACTTTATACTCCTTTAAATACGGTTGCGCCTGATGATAATGACAGGCCTACCACAG
  L  L  Y  T  P  L  N  T  V  A  P  D  D  N  D  R  P  T  T  D
                           |711                            |721

       |2171      |2181      |2191      |2201      |2211      |2221
ACATGTGTTCACCTGCTTTCCCCATCTTAGGTACTACTCCAGCCTTTGGCCCTCAAGGCT
  M  C  S  P  A  F  P  I  L  G  T  T  P  A  F  G  P  Q  G  S
                           |731                            |741

       |2231      |2241      |2251      |2261      |2271      |2281
CCTATGAAAAAGCATCTACAGAAGTTGCTGGACGAACTTGCTGCACACCCCAACTTGCTC
  Y  E  K  A  S  T  E  V  A  G  R  T  C  C  T  P  Q  L  A  H
                           |751                            |761

       |2291      |2301      |2311      |2321      |2331      |2341
ATTTGAAAGACTCAGTCTGTCTTGCCAGTGATACTAAACAATTCGACAGTTCAGGCAGCC
  L  K  D  S  V  C  L  A  S  D  T  K  Q  F  D  S  S  G  S  P
                           |771                            |781

       |2351      |2361      |2371      |2381      |2391      |2401
CAGCAAAACCACATACCACCCTGCAAGTGTCAGGCAGGCAAGGACAACCTACCTGTGACT
  A  K  P  H  T  T  L  Q  V  S  G  R  Q  G  Q  P  T  C  D  C
                           |791                            |801

       |2411      |2421      |2431      |2441      |2451      |2461
GTGACTCTGTCCCGCCAGGAACACCTCCACCCATTGAGTCATTCACTTTTAAAGAAAATC
  D  S  V  P  P  G  T  P  P  P  I  E  S  F  T  F  K  E  N  Q
                           |811                            |821
```

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        |2471      |2481      |2491      |2501      |2511      .        .
AGCTCTGTAGAAACACATGCCAGGAGCTGCATAAACATTCCGTCGAACAGgtacaatcca
   L   C   R   N   T   C   Q   E   L   H   K   H   S   V   E   Q
                                          |831


     .        .        .        .        .        .        .        .        .
tttcctctgtgaaattttctctgaaggaatgaaatgccttagtgaatgtaaacagcatga


     .        .        .        .        .        .        .        .        .
cttgcttgcgcattgggccttccacgtttaagaatggtttgacgtgtttctttgatatga


     .        .        .        .        .        .        .        .        .
tttcattgtaatcattaagttcattctggggaaattaaggttcattaaaatgtttctttt


     .        .        .        .        .        .        .        .        .
aaatatgggaggtcctattctctttgttatcagtgaaacagtttgcatttggagctttgc


     .        .        .        .        .        .        .        .
tgctgttataagaggaaataaagacaatacgaagtagacattttgatgag



Exon 6 | Start: 17083 | End: 17154 | Length: 71

     .        .        .        .        .        .        .        .        .
gcatgacttgcttgcgcattgggccttccacgtttaagaatggtttgacgtgtttctttg


     .        .        .        .        .        .        .        .        .
atatgatttcattgtaatcattaagttcattctggggaaattaaggttcattaaaatgtt


     .        .        .        .        .        .        .        .        .
tctttaaatatgggaggtcctattctctttgttatcagtgaaacagtttgcatttggag


     .        .        .        .        .        .        .        .        .
ctttgctgctgttataagaggaaataaagacaatacgaagtagacattttgatgagtggg


     .        .        .        .        .        .        .        .        .
taatgcaggcagacattatacataaagtgtagactaatgatgtgacttttgtttttcacag


        |2521      |2531      |2541      |2551      |2561      |2571
ACTGAAACAGCAGAGCTTCCTGCTTCTGATAGCATAAACCCAGGCAACCTACAATTGGTT
   T   E   T   A   E   L   P   A   S   D   S   I   N   P   G   N   L   Q   L   V
        |841                                    |851


        |2581      .        .        .        .        .        .        .        .        .
TCAGAGTTAAAGgtcagaagaatattctcttccagtgtctcgtgtcttacatatgaaaac
```

9

```
S   E   L   K
        |861


    .       .       .       .       .       .       .       .       .       .       .       .
tttaatgaactgaaaagaattcagtcatatagcttcttgttctttaatactattaaagat


    .       .       .       .       .       .       .       .       .       .       .       .
attggtaaacagattcagaaaaacagatttggattggttattttttcccaatatttacctc


    .       .       .       .       .       .       .       .       .       .       .       .
tgtttatgttttgagctctcctcttaaagtttctatgccaacctattggcaagaacaact


    .       .       .       .       .       .       .       .       .       .       .       .
taggctaagtaactgaacttcatgtctaaatctaagttagggagctgggcacggtggctc


    .       .       .
acccctataatc



Exon 7 | Start: 19961 | End: 20122 | Length: 161


    .       .       .       .       .       .       .       .       .       .       .       .
gtaagccgagattgcaccactgcactccagcctgggtgataaagtgagactcagtcccaa


    .       .       .       .       .       .       .       .       .       .       .       .
aaacacccaaaaattaaaattaataaaataaataaaaaataaaatctttcatgatgtaag


    .       .       .       .       .       .       .       .       .       .       .       .
tttgataggcattttttttaggtacataagaaccacaaagctctttctttttcacctgcata


    .       .       .       .       .       .       .       .       .       .       .       .
agacttaaattttacatacctactgtttcattgaattataattcatcactttgcatactt


    .       .       .       .       .       .       .       .       .       .       .       .
atgctttgcataaaacagcactcgagtgccactttaacagaactgttgccattgtgtcag

      |2591      |2601      |2611      |2621      |2631      |2641
AATCCTTCAGGTTCCTGTTCCGTAGATGTGAGTGCCATGTTTTGGGAAAGAGCCGGTTGT
N   P   S   G   S   C   S   V   D   V   S   A   M   F   W   E   R   A   G   C
                              |871                              |881

      |2651      |2661      |2671      |2681      |2691      |2701
AAAGAGCCATGTATCATAACTGCTTGCGAAGATGTAGTTTCTCTTTGGAAAGCTCTGGAT
K   E   P   C   I   I   T   A   C   E   D   V   V   S   L   W   K   A   L   D
                              |891                              |901
```

10

```
     |2711      |2721      |2731      |2741       .       .        .
GCTTGGCAGTGGGAAAAACTTTATACCTGGCACTTCGCAGAGgtaagtgggaatctcgag
A   W   Q   W   E   K   L   Y   T   W   H   F   A   E
                                   |911


     .       .       .       .       .       .       .       .       .       .       .       .
ctgaaagagatctttgcagccatttgcctgataatgtagatgggcagcttaccaaaattg


     .       .       .       .       .       .       .       .       .       .       .       .
ggagctatgaccatgcaaggcagaacagagatgaggttttttttcccaacattttattatg


     .       .       .       .       .       .       .       .       .       .       .       .
aaaagtttcaaacatccagaaaagttgtatagtgagcacccatatacccaccattctaga


     .       .       .       .       .       .       .       .       .       .       .       .
ctctaccattaacatcctgctttgttcgctttatcacaaattttttgtttgtttgtttgag


     .       .       .       .       .       .       .       .       .
acagggtctcactctgtcatgcaggctggagtgcagtggcat



Exon 8 | Start: 22264 | End: 22349 | Length: 85


     .       .       .       .       .       .       .       .       .       .       .       .
tatacttttaaatggctgcataaatattctttacattcacatgccaaaatatacccaatt


     .       .       .       .       .       .       .       .       .       .       .       .
attcccctattgttagaattataccttgcattaggtaaatgctcagtaagcactattatg


     .       .       .       .       .       .       .       .       .       .       .       .
ctattatgcatatagtttatttagatttacagctaataaaaagagttttctgagccttca


     .       .       .       .       .       .       .       .       .       .       .       .
aatgatgaaaattatccttgtacagtgagaatacaaaagaatgtgataaattttggaaaa


     .       .       .       .       .       .       .       .       .       .       .       .
tctggattaaacaaaaatgaaacaaccaagcataattttttggctgctttgttttatttag

     |2751      |2761      |2771      |2781      |2791      |2801
GTTCCAGTATTACAGATAGTTCCAGTGCCTGATGTGTATAATCTCGTGTGTGTAGCTTTG
V   P   V   L   Q   I   V   P   V   P   D   V   Y   N   L   V   C   V   A   L
                |921                             |931


     |2811      |2821      |2831       .       .       .       .       .       .


                                   11
```

```
GGAAATTTGGAAATCAGAGAGATCAGgtatgtaattcccaaggagtgatttgtttttcct
G  N  L  E  I  R  E  I  R
              |941


   .     .     .     .     .     .     .     .     .     .     .     .
tcatctttgtctctgtcagctggttttaagtgcaggtaataacctaggcttgagtcttga

   .     .     .     .     .     .     .     .     .     .     .     .
aagaatctgaaagatctaaagagagagagatttgtttaaaaaaaaatcaatagaatgaca

   .     .     .     .     .     .     .     .     .     .     .     .
tccctgactgaagtttctatttaaaatgtgaacctaggctgggcgcagtggctcacgcct

   .     .     .     .     .     .     .     .     .     .     .     .
gtaatcccagcactttgggaggccaaggaaggtggatcaactgaggtcaggagtttgaga

   .     .     .     .     .     .
ccagcctggccaacatggtgaaactg



Exon 9 | Start: 23228 | End: 23389 | Length: 161

   .     .     .     .     .     .     .     .     .     .     .     .
ggagttcgagaccagcctgaccaacatggtgaaaccccgtctctacaaaaatacagaaaa

   .     .     .     .     .     .     .     .     .     .     .     .
attagccaggtgtggtggtgcgcacctataatcccagctactcaggaggctgaggcagga

   .     .     .     .     .     .     .     .     .     .     .     .
cagtcgcttgaacctgggaggcagagttgcagtgagccaagattgtgccactgcactcca

   .     .     .     .     .     .     .     .     .     .     .     .
gcctaggcgacagagcaagactctgtctcaaaaaaaaaaaaaaaaaaaaaaagtgaaccta

   .     .     .     .     .     .     .     .     .     .     .     .
tcctttaatattaaaaggttactcctcacatcaccccatttttccttatatttggcttag

     |2841      |2851      |2861      |2871      |2881      |2891
GGCATTGTTTTGTTCCTCTGATGATGAAAGTGAAAAGCAAGTACTACTGAAGTCTGGAAA
 A  L  F  C  S  S  D  D  E  S  E  K  Q  V  L  L  K  S  G  N
              |951                                  |961

     |2901      |2911      |2921      |2931      |2941      |2951
TATAAAAGCTGTGCTTGGCCTGACAAAGAGGAGGCTAGTTAGTAGCAGTGGGACCCTTTC
 I  K  A  V  L  G  L  T  K  R  R  L  V  S  S  S  G  T  L  S
```

```
                        |971                              |981

          |2961        |2971        |2981        |2991      .        .        .
TGATCAACAAGTAGAAGTCATGACGTTTGCAGAAGATGGAGGgtaagaaaagcattgatt
 D   Q   Q   V   E   V   M   T   F   A   E   D   G   G
                        |991


       .        .        .        .        .        .        .        .        .        .        .        .
gatttttaactattagatgaagaatgattttatcacaggtttcagagaaagttgggtaac


       .        .        .        .        .        .        .        .        .        .        .        .
taggatctcgttttttctgtgctggggggtgtaatataagcatgtaccgcatcaacactagg


       .        .        .        .        .        .        .        .        .        .        .        .
ttatgacatagaagcaggttagtgaggtggaagccagacatgtcagggatgaagtcaaag


       .        .        .        .        .        .        .        .        .        .        .        .
aaggtgagaggctcagcaaatgtagtttgttcttcagtcttcttgaaatctgtgtgtccc


       .        .        .        .        .        .        .        .        .
ttaaatgttagaaatacctctgctgggcacagtggctcatgc



Exon 10 | Start: 24880 | End: 24996 | Length: 116

    .        .        .        .        .        .        .        .        .        .        .        .
ttagatggtgatgcaattcattgagataggaatgcagaaagaaacaaaaggtttatagaa

    .        .        .        .        .        .        .        .        .        .        .        .
aaagttaacaagtttaattttgaatataatgaattcgaggtgcttgcagcatatctaggt

    .        .        .        .        .        .        .        .        .        .        .        .
agatattatgaaagtaatatatgttcattgtagaaagtttagtatacacgttttctgggt

    .        .        .        .        .        .        .        .        .        .        .        .
tagattttttttttcctgatattaggttagtttatattatgcagttcaacaatgcggagaa

    .        .        .        .        .        .        .        .        .        .        .        .
gggctacctagagactgctttagtgcaaagtactgacttttcatactgtttttaattacag

     |3001        |3011        |3021        |3031        |3041        |3051
AGGCAAAGAAAACCAATTTTTGATGCCCCCTGAGGAGACTATACTAACTTTTGCTGAGGT
 G   K   E   N   Q   F   L   M   P   P   E   E   T   I   L   T   F   A   E   V
     |1001                              |1011
```

```
     |3061     |3071     |3081     |3091     |3101     |3111
CCAAGGGATGCAAGAAGCTCTGCTTGGTACTACTATTATGAACAACATTGTTATTTGgta
 Q  G  M  Q  E  A  L  L  G  T  T  I  M  N  N  I  V  I  W
     |1021                            |1031


  .     .     .     .     .     .     .     .     .     .     .     .
agctttccctctaggtcctcagttccctcatctgtagtatgaggatatacctctaatttt


  .     .     .     .     .     .     .     .     .     .     .     .
acagggttgttgtgaagattaaataagagagtatgtgtaaacatgattgtggttttgtgt


  .     .     .     .     .     .     .     .     .     .     .     .
tgctgttgttgttgtttttgttgtgtttttgagacagagtctcctcctatcacccaggtgg


  .     .     .     .     .     .     .     .     .     .     .     .
gagtacagtggtatgatctcggctcactgcaacctctgcctcctggattcaagtgattct


  .     .     .     .     .     .     .     .     .     .     .     .
cctgcctcagcctcccgagtagctgggattataggcatgtgccaccacacccagcta




Exon 11 | Start: 32267 | End: 32354 | Length: 87

  .     .     .     .     .     .     .     .     .     .     .     .
catgtgcctgatttcaataccaggttgaatgagatgatggaaccttcctcatggaatttg


  .     .     .     .     .     .     .     .     .     .     .     .
gagagatttatccctaggggcattgtagatttaatctaaggctgaactatcaaatgaaac


  .     .     .     .     .     .     .     .     .     .     .     .
tattggcaaaattaacccacagttctacttttacctaaatctatgactaaagaaaactaa


  .     .     .     .     .     .     .     .     .     .     .     .
ggagctcttagttttttccctggtcacctcctaagacatgctatgatgaataagaaaata


  .     .     .     .     .     .     .     .     .     .     .     .
ttttctgaatactggtttgttggaagaatgtgatcagcttatttattttttgttatctaag
     |3121     |3131     |3141     |3151     |3161     |3171
GAATTTAAAAAACTGGTCAACTCCTGAAAAAGATGCACATTGATGATTCTTACCAAGCTTC
 N  L  K  T  G  Q  L  L  K  K  M  H  I  D  D  S  Y  Q  A  S
        |1041                            |1051

        |3181     |3191     |3201.     .     .     .     .     .
AGTCTGTCACAAAGCCTATTCTGAAATGgtaagtaatgactggctgggaccactttgtgt
```

14

```
 V  C  H  K  A  Y  S  E  M
       |1061


   .       .       .       .       .       .       .       .       .       .       .       .
gttactgttggtctcattaagtgagagcagtaagtcataagcagtaatgaacaaaccttc


   .       .       .       .       .       .       .       .       .       .       .       .
cccgtggcatctttttttcaaaattggatagcaatgtttgtcctttcttgaaatttaggat


   .       .       .       .       .       .       .       .       .       .       .       .
gaaaataagtgttggtacagtgattgcttggtaaattttctggctgtaggacctgagggc


   .       .       .       .       .       .       .       .       .       .       .       .
aaatatttatttctagctgtggatttgaactgagaactattatgcctgttatcagacttg


   .       .       .       .       .       .
actcccagccacattgccatgtttaagt



Exon 12 | Start: 38346 | End: 38494 | Length: 148

   .       .       .       .       .       .       .       .       .       .       .       .
gaggctgaggtgggaggatcccttgaggccaggtgttcaacaacagcctgggtaacacag


   .       .       .       .       .       .       .       .       .       .       .       .
gaaggccttgtctctaaaaaaaaaaagaagaagaacaagaagccagaagtccagtccagt


   .       .       .       .       .       .       .       .       .       .       .       .
aataatctcaacagttcctagacggcagggaaaaaaatcaagccagtggttaaatcctgg


   .       .       .       .       .       .       .       .       .       .       .       .
atacttcagagcctatcggtcattgctttaattgtttggttttttgtctctgccagatctt


   .       .       .       .       .       .       .       .       .       .       .       .
tattttcctgacatactcttgacagtctatttgggatatttattttttctccgaaattag

            |3211        |3221        |3231        |3241        |3251        |3261
GGGCTTCTCTTTATTGTCCTGAGTCATCCCTGTGCCAAAGAGAGTGAGTCGTTGCGAAGC
G  L  L  F  I  V  L  S  H  P  C  A  K  E  S  E  S  L  R  S
            |1071                                |1081

            |3271        |3281        |3291        |3301        |3311        |3321
CCTGTGTTTCAGCTCATTGTGATTAACCCTAAGACGACTCTCAGCGTGGGTGTGATGCTG
P  V  F  Q  L  I  V  I  N  P  K  T  T  L  S  V  G  V  M  L
            |1091                                |1101
```

```
         |3331       |3341      .      .      .      .      .      .
TACTGTCTTCCTCCAGGGCAGGCTGGCAGgcaagtgtgcataactgctactctatgggtg
Y  C  L  P  P  G  Q  A  G  R
          |1111


      .      .      .      .      .      .      .      .      .      .
ggacattctgaaaggcactgtgcaaacacaaaaactagatattttgtgtcacttagaag


      .      .      .      .      .      .      .      .      .      .
aatggaaaacatgaaatactatatatcatgataggaatattcagaagtaggatgaagatt


      .      .      .      .      .      .      .      .      .      .
agtggacttgagtcaaaccccagattccctgcatcctgatctctactagtatgggttat


      .      .      .      .      .      .      .      .      .      .
ataggtttttaatagtgtttattcaagccctgttttttcccctaaggtaaatattttggc


      .      .      .      .      .      .
agcacatggtggatcatgcctgtaatccc




Exon 13 | Start: 42689 | End: 43196 | Length: 507


      .      .      .      .      .      .      .      .      .      .
gacactgagttgggactgagtttggccagagtgatggagagtggaaggaaggccactgtg


      .      .      .      .      .      .      .      .      .      .
cgccagccttcaattgctacaagatgcatcagagagattggcaggaactggacatgtgat


      .      .      .      .      .      .      .      .      .      .
tctgtccaaaactgcaacacaatagccaacagacctctaaggctacaaatgtaggcattc


      .      .      .      .      .      .      .      .      .      .
atagttacagggattttttgttcctgttgctggtttttgggaacatggtttttgaccttttttt


      .      .      .      .      .      .      .      .      .      .
ttttttttaattgttttttggatatgtaatctgaattatatcttctttgtatgctatcag

|3351       |3361       |3371       |3381       |3391       |3401
GTTCCTGGAAGGTGACGTGAAAGATCACTGTGCAGCAGCAATCTTGACTTCTGGAACAAT
 F  L  E  G  D  V  K  D  H  C  A  A  A  I  L  T  S  G  T  I
          |1121                               |1131

|3411       |3421       |3431       |3441       |3451       |3461
```

16

```
TGCCATTTGGGACTTACTTCTCGGTCAGTGTACTGCCCTCCTCCCACCTGTCTCTGACCA
 A  I  W  D  L  L  L  G  Q  C  T  A  L  L  P  P  V  S  D  Q
        |1141                            |1151


|3471     |3481     |3491     |3501     |3511     |3521
ACATTGGTCTTTTGTGAAATGGTCGGGTACAGACTCTCATTTGCTGGCTGGACAAAAAGA
 H  W  S  F  V  K  W  S  G  T  D  S  H  L  L  A  G  Q  K  D
        |1161                            |1171


|3531     |3541     |3551     |3561     |*11      |*21
TGGAAATATATTTGTATACCACTATTCATAAGTTAGGGTAAAGTGAAAACACAATTTTCT
 G  N  I  F  V  Y  H  Y  S  *
        |1181


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


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


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


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


 |*271     |*281     |*291      .     .     .     .     .     .
GGCAATAAATATTTATTTTTATACATTCtgcttggcatgttattgtttcccattctttca


    .     .     .     .     .     .     .     .     .     .     .     .
agatcatttgcagaagcaagaactaattattatacaaccaggatatttaatcaatagtct


    .     .     .     .     .     .     .     .     .     .     .     .
ttgcctagtaagtgtaaatttcagttcagttaacttactacactaatatgcaatatactt


    .     .     .     .     .     .     .     .     .     .     .     .
tttgtgctatttgtaatactttattttttacatacatactaaaataaaatgaaacctacta


    .     .     .     .     .     .     .     .     .     .     .     .
aaatatcctaatttagggatactcttactctttttcattctcatgcatctttcatgccag


    .     .     .     .     .     .     .
tgctgcattatcactagagtcacctttt


LRG Parser: Version: 1.1, Version Date: 11/02/2015
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Reader: Version: 1, Version Date: 11/02/2015
Writer: Version: 1, Version Date: 11/02/2015
Control: Version: 1, Version Date: 11/02/2015
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