Gene: PALB2 - Sequence: NG_007406.1
Transcript: NM_024675.3 - Protein: NP_078951.2
Date : February 26, 2015

1^{st} line: Base numbering. Full stops for intronic +/- 5, 10, 15...
2^{nd} line: Base sequence. lower case Introns, upper case Exons
3^{rd} line: Amino acid sequence. Printed on FIRST base of codon
4^{th} line: Amino acid numbering. Numbered on 1^{st} 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         .    .    .    .    .    .    .    .    .    .
AGGAAAAGgtgccgggggtgcgggaagggcggacgcaggactctgaccccgctttcccag
  E  K

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

```
ggttttaggcctggctttgtgtcctcggcagtccgagggcagcagtatcatctgaccacc

  .    .    .    .    .    .    .    .    .    .    .    .
ccctcctcttagggctgaggggcacagaaaatgaaaatgtggaaatagcgtggtgctca

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

  .    .    .    .    .    .    .    .    .    .    .    .
cagtttgtagataaagctgtatcgacacccttgctcctcccccctcccacaccctcaatc

  .    .
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
```

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

.    .    .    .    .    .    .    .    .    .    .    .
cttgactctataaaactttaaagaaaacgtatttctggggctgtttttgtctcctctagC
                                                          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

.    .    .    .    .    .    .    .    .    .    .    .
tcactgattctttcttaaataaatgtttagtagtatttatatataataggttaaaaatga

.    .    .    .    .    .    .    .    .    .    .    .
gtatttttgttttatttataagaaaaatataagttatatacatttttttcctcctcag

         |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

        |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
GTGAACTTACTACTCACGACCTAAAAAACATTAGATTTACTTCACCTGTAAGTTTGGAGG
  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
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        |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
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
GTCATTTGGATGTCAAGAAAAAAGGGTTTAAAAATAAAAATAAGGATGCAAGTAAAAATT
  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

   .    .    .    .    .    .    .    .    .    .    .    .
gatgatgatgatgaaagttaacaattactatttgcctggcacttccttttctttctttttc

   .    .    .    .    .    .    .    .    .    .    .    .
taaaaagtgacagggccaagtgtggtggcttacgtctgtaatcccagcactttgggaggc

   .    .    .    .    .    .    .    .    .    .    .    .
tgaggaacagagtgagaccctggctcaaaaaaatttaaataaataaataaataaataaat

   .    .    .    .    .    .    .    .    .    .    .    .
aaataaataaataaaaataaagagacaggggctcactgttgtccaggctggagtgccgtg

   .    .    .    .    .    .    .
gtgcagcctctatctcctgggctcaaatgttcc
```

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

.    .    .    .    .    .    .    .    .    .    .    .
tgaccgttgtttgaacccttcgcccaagtttctgagtcatggatgggaaaagtaatgaac

.    .    .    .    .    .    .    .    .    .    .    .
atttttttagtatatttgagtttagaagctcactctttgttgggtattacatttaagaatg

.    .    .    .    .    .    .    .    .    .    .    .
gtttaacatgtttctttgataggacttcattgtaaacattaagttcattctggggaaatt

.    .    .    .    .    .    .    .    .    .    .    .
aaggttcattaaaatgtttcttttaaatctaggagatcctattctctttgtcatcagtga

.    .    .    .    .    .    .    .    .    .    .    .
aacagattgtctgttttgttgggttttgttactattttgtgacttatttttcttctttag

      |1691     |1701     |1711     |1721     |1731     |1741
GGAAGAAAAGTCGTCATCAAAAAGAGGATTCCCTTTCTTGGAGTAATAGTGCTTATTTAT
  K  K  S  R  H  Q  K  E  D  S  L  S  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

      |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
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```
     |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

     |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

.    .    .    .    .    .    .    .    .    .    .    .
tcttttaaatatgggaggtcctattctctttgttatcagtgaaacagtttgcatttggag

.    .    .    .    .    .    .    .    .    .    .    .
ctttgctgctgttataagaggaaataaagacaatacgaagtagacattttgatgagtggg

.    .    .    .    .    .    .    .    .    .    .    .
taatgcaggcagacattatacataaagtgtagactaatgatgtgacttttgttttcacag

      |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
S  E  L  K
      |861

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

 .    .    .    .    .    .    .    .    .    .    .    .
attggtaaacagattcagaaaaacagatttggattggttatttttcccaatatttacctc

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

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

 .    .    .
acccctataatc
```

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

```
.    .    .    .    .    .    .    .    .    .    .    .
gtaagccgagattgcaccactgcactccagcctgggtgataaagtgagactcagtcccaa

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

.    .    .    .    .    .    .    .    .    .    .    .
tttgataggcatttttttaggtacataagaaccacaaagctctttcttttcacctgcata

.    .    .    .    .    .    .    .    .    .    .    .
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

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

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

 .    .    .    .    .    .    .    .    .    .    .    .
ggagctatgaccatgcaaggcagaacagagatgaggttttttcccaacattttattatg

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

 .    .    .    .    .    .    .    .    .    .    .    .
ctctaccattaacatcctgctttgttcgctttatcacaaatttttgtttgtttgtttgag

 .    .    .    .    .    .    .    .    .
acagggtctcactctgtcatgcaggctggagtgcagtggcat
```

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

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

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

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

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

.    .    .    .    .    .    .    .    .    .    .    .
tctggattaaacaaaaatgaaacaaccaagcataatttttggctgctttgttttatttag

  |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   .    .    .    .    .    .
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

.    .    .    .    .    .    .    .    .    .    .    .
gcctaggcgacagagcaagactctgtctcaaaaaaaaaaaaaaaaaaaaagtgaacctag

.    .    .    .    .    .    .    .    .    .    .    .
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

 .    .    .    .    .    .    .    .    .    .    .    .
taggatctcgtttttctgtgctgggggtgtaatataagcatgtaccgcatcaacactagg

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

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

 .    .    .    .    .    .    .    .    .
ttaaatgttagaaatacctctgctgggcacagtggctcatgc
```

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

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

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

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

.    .    .    .    .    .    .    .    .    .    .    .
tagatttttttttcctgatattaggttagtttatattatgcagttcaacaatgcggagaa

.    .    .    .    .    .    .    .    .    .    .    .
gggctacctagagactgctttagtgcaaagtactgacttttcatactgttttaattacag

    |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

 .    .    .    .    .    .    .    .    .    .    .    .
tgctgttgttgttgttttgttgtgttttgagacagagtctcctcctatcacccaggtgg

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

 .    .    .    .    .    .    .    .    .    .    .    .
cctgcctcagcctcccgagtagctgggattataggcatgtgccaccacacccagcta
```

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

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

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

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

.    .    .    .    .    .    .    .    .    .    .    .
ggagctcttagtttttccctggtcacctcctaagacatgctatgatgaataagaaaata

.    .    .    .    .    .    .    .    .    .    .    .
ttttctgaatactggtttgttggaagaatgtgatcagcttatttatttttgttatctaag

       |3121     |3131     |3141     |3151     |3161     |3171
GAATTTAAAAACTGGTCAACTCCTGAAAAAGATGCACATTGATGATTCTTACCAAGCTTC
 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
 V  C  H  K  A  Y  S  E  M
       |1061

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

  .    .    .    .    .    .    .    .    .    .    .    .
cccgtggcatctttttcaaaattggatagcaatgtttgtcctttcttgaaatttaggat

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

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

  .    .    .    .    .    .
actcccagccacattgccatgtttaagt
```

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

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

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

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

.    .    .    .    .    .    .    .    .    .    .    .
atacttcagagcctatcggtcattgctttaattgtttggtttttgtctctgccagatctt

.    .    .    .    .    .    .    .    .    .    .    .
tatttttcctgacatactcttgacagtctatttgggatatttatttttctccgaaattag

         |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

   .    .    .    .    .    .    .    .    .    .    .    .
ggacattctgaaaggcactgtgcaaacacaaaaactagatatttttgtgtcacttagaag

   .    .    .    .    .    .    .    .    .    .    .    .
aatggaaaacatgaaatactatatatcatgataggaatattcagaagtaggatgaagatt

   .    .    .    .    .    .    .    .    .    .    .    .
agtggacttgagtcaaaccccagattccctgcatcctgatctctactagtatggggttat

   .    .    .    .    .    .    .    .    .    .    .    .
ataggtttttaatagtgtttattcaagccctgtttttttcccctaaggtaaatattttggc

   .    .    .    .    .    .
agcacatggtggatcatgcctgtaatccc
```

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

.    .    .    .    .    .    .    .    .    .    .    .
gacactgagttgggactgagtttggccagagtgatggagagtggaaggaaggccactgtg

.    .    .    .    .    .    .    .    .    .    .    .
cgccagccttcaattgctacaagatgcatcagagagattggcaggaactggacatgtgat

.    .    .    .    .    .    .    .    .    .    .    .
tctgtccaaaactgcaacacaatagccaacagacctctaaggctacaaatgtaggcattc

.    .    .    .    .    .    .    .    .    .    .    .
atagttacagggatttttgttcctgttgctggttttgggaacatggttttgacctttttt

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

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

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

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

  .    .    .    .    .    .    .    .    .    .    .    .
tttgtgctatttgtaatactttatttttacatacatactaaaataaaatgaaacctacta

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

  .    .    .    .    .    .
tgctgcattatcactagagtcacctttt
```

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LRG Parser: Version: 1.1, Version Date: 11/02/2015
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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